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A LABORATORY HANDBOOK FOR DIETETICS

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A LABORATORY HANDBOOK FOR DIETETICS

BY

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REVISED EDITION

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PREFACE TO THE FIRST EDITION.

Investigations into the quantitative requirements of the human body have progressed so far as to make dietetics to a certain extent an exact science, and to emphasize the importance of a quantitative study of food materials. It is the purpose of this little book to explain the problems involved in the calculation of food values and food requirements, and the construction of dietaries, and to furnish reference tables which will minimize the labor involved in such work without limiting dietary study to a few food materials.

Only brief statements of the conditions affecting food requirement have been made, the reader being referred to general textbooks on the subject of nutrition for fuller information, but such data have been included as seem most useful in determining the amount of food for any normal individual under varying conditions of age and activity.

Most of the available information in regard to food values is in terms of percentage composition, or of a single unit, as the 100-Calorie portion or the individual serving. The two latter are very useful, but too limited in scope and too inelastic in form to serve the needs of the general student. The first involves calculations which are always tedious and rob the student of time for a more comprehensive comparative study of food values. To lighten this labor, tables are included, giving the food values for the 100-Calorie Portion, which is taken as the Standard Portion in the sense that it serves as a convenient unit in building up a day's ration to yield a stated number of Calories; for the gram, which is the unit of weight for all scientific workers; for the ounce, the common unit of the small family group; and for the pound, the unit of the large family or institutional group. These tables have been in practical use for several years in the author's classes, and their value in relieving the student of monotonous clerical labor has been demonstrated.

While it is desirable to encourage the use of labor-saving devices, the student of dietetics ought to know the processes involved

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in dietary calculation, for these must be applied frequently in estimation of the food values of mixtures of food materials. Experience has shown that every step must be explained in detail, and no apology is offered for the exceeding simplicity of some of the problems presented.

Little attempt has been made to give measures corresponding to different weights of food materials, because this is properly a part of laboratory work in dietetics, and ample space has been provided for records of original observations. Such data must always be used with caution, for there is great diversity in the capacity of measuring vessels unless officially standardized, and much more in foods of different qualities, localities, and seasons.

The author gratefully acknowledges the helpful criticism of Professor Henry C. Sherman in the preparation of this work.

PREFACE TO THE SECOND EDITION.

Among the recent advances in the science of nutrition, none is more notable than the recognition of three vitamines as essential to the continued well-being of mankind, both in childhood and in adult life. It is not yet possible to speak of these systematically in quantitative terms, although much knowledge has already accumulated as to their occurrence in food materials, and it is possible to grade many foods as to the relative richness or poorness of their yield of the different vitamines. A table has been prepared which indicates roughly the vitamine content of a number of common food materials. This table is necessarily far from complete, but it represents fairly our present state of knowledge.

Owing to the increasing interest in the nutrition of children, the section furnishing data for the estimation of their energy requirements has been extended, both in the direction of more material on weight and height relationships and of tables of energy requirements for different ages.

The tables on energy requirements of adults have been amplified and, it is hoped, put into more convenient form for practical use.

Dietary standards for calcium, iron, and phosphorus have been somewhat modified by recent experimental work, and the revised data have been tabulated with the idea of facilitating their use. The tables giving the ash content of food materials have been revised in accordance with the tables in the Second Edition of the *Chemistry of Food and Nutrition*, with the kind permission of the author, Professor Henry C. Sherman.

An abridged method of dietary calculation, designed to reduce the labor where large quantities of food are involved, as in institutions, has been described in detail. Thanks for permission to use this method are due to Dr. A. R. Rose.

Several new reference tables, furnishing additional data on the composition of food materials and on the relation of weight

to measure in food, will, it is hoped, make this book still more useful than the first edition.

The author wishes to thank Miss Grace MacLeod, Miss Harriet Barto, and Miss Margaret Sandels for their generous help in bringing this material up to date.

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A LABORATORY HANDBOOK FOR DIETETICS

PART I.

FOOD VALUES AND FOOD REQUIREMENT.

THE COMPOSITION OF FOOD MATERIALS.

The nutritive value of any food material depends largely upon its chemical composition. Through food must be supplied all the elements which enter into the structure of the living body, which afford energy for its activities, and which so regulate the vital processes as to produce that harmonious interaction which means health. The chief elements which food must furnish are carbon, hydrogen, oxygen, nitrogen, sulphur, phosphorus, iron, sodium, potassium, calcium, magnesium, and chlorine. The body can use these elements only in the form of certain definite compounds; charcoal and diamonds are forms of carbon, but no one would take them for food. The most important combinations of elements or chemical groups available for the welfare of the body are shown in the following table:

Carbon, Hydrogen, Oxygen	forming **Carbohydrates.**
Carbon, Hydrogen, Oxygen	forming **Fats.**
Carbon, Hydrogen, Oxygen, Nitrogen, Sulphur, Phosphorus (sometimes)	forming **Proteins.**
Hydrogen, Oxygen	forming **Water.**
Sulphur, Phosphorus, Chlorine, Sodium, Potassium, Calcium, Magnesium, Iron, Iodine, Silicon	forming **Ash Constituents,** which exist partly as mineral salts and partly in combination with carbohydrates, fats, proteins, and other organic compounds.

Unidentified substances known as **Vitamines.**

With the exception of water, which can be supplied independently of other substances in such quantities as may be necessary, the essential constituents of food are proteins, fats, carbohydrates, ash constituents, and vitamines.

These six chemical groups,—proteins, fats, carbohydrates, ash constituents, vitamines, and water—afford all the materials essential to an adequate diet.

In case of many food materials, there is more or less inedible material, such as the rind of fruits, the shells of nuts, bone, connective tissue, and sometimes fat in meat, which is discarded as refuse. It is customary for food analysts to report their findings on a food which contains refuse in two ways:

1. As Purchased, the amount of material which is ordinarily rejected being included in the total weight on which the percentage of each constituent is calculated.

2. Edible Portion, the refuse being entirely discarded before taking the weight on which the calculations are made.

A single example will serve to make this clear. An average banana, weighing about five and one-half ounces, will lose on peeling nearly two ounces, or approximately thirty-five per cent of its original weight. The total weight of each of the foodstuffs in such a banana is as follows:

Water, ounces	Protein, ounces	Fat, ounces	Carbohydrate, ounces	Ash, ounces
2.69	0.04	0.02	0.79	0.03

If these values are expressed in percentages of the original weight of the unpeeled fruit (5.5 ounces), the results are reported "As Purchased":

Refuse,* per cent	Water, per cent	Protein, per cent	Fat, per cent	Carbohydrate, per cent	Ash, per cent
35.0	48.9	0.8	0.4	14.3	0.6

If they are expressed in terms of the peeled fruit (3.57 ounces) the results appear somewhat different, and are reported as "Edible Portion":

Refuse, per cent	Water, per cent	Protein, per cent	Fat, per cent	Carbohydrate, per cent	Ash, per cent
——	75.4	1.1	0.6	22.1	0.8

In which of the above ways food values shall be expressed is merely a matter of convenience, provided the amount of refuse is not far

* The average per cent of refuse in a number of the more common food materials is shown in Table XV.

from the average. A greater degree of accuracy as to nutritive value is insured by first removing the inedible portion, and then basing calculations on the weight of edible substance, but it must be borne in mind that the refuse affects estimations of cost made in this way. Thus if three bananas are purchased for five cents, and are found to weigh one pound in their skins, the weight of edible material will be about ten ounces; at the rate of ten ounces for five cents, the cost per pound of edible material will be nearly eight cents. Knowing the percentage of refuse, we can convert the weight of edible material into weight as purchased by the following proportion:

Weight of edible portion : Per cent of edible portion : : x : 100.

x = weight of material as purchased.

Thus, in the case above,

Weight of edible portion Per cent of edible portion

10.4 ounces : 65 : : x : 100.

x = 16 (ounces of material as purchased).

Water is present in all food materials, with the exception of a few pure fats, sugars and starches. The amount may be anywhere from two to ninety-five per cent, crackers averaging about seven per cent, bread about thirty-five per cent, most meats from sixty to seventy-five per cent, and fresh fruits and vegetables from seventy-five to ninety-five per cent. Since water can be added to the diet without cost, its presence or absence is most significant from the economic standpoint. A pound of fresh tomatoes and one of rolled oats can often be bought for the same price, but the tomatoes will contain fifteen ounces of water and one ounce of dry matter, whereas the oats will furnish fifteen ounces of dry matter and one ounce of water; in other words, the dry matter in the tomatoes in this case may cost eighty cents per pound, while that in rolled oats costs five and one-third cents per pound.

Protein is not determined directly, but is estimated from the amount of nitrogen which the given material contains. The average amount of nitrogen in protein is estimated as about sixteen per cent. If we assume that sixteen parts of nitrogen correspond to one hundred parts of protein, then for one part of nitrogen, there will be six and one-fourth parts of protein. Analyses made

in this way report the crude protein as "N × 6.25." This method is not strictly accurate for two reasons; first, because the nitrogen present may not be altogether in the form of true proteins, but partly as simpler compounds of lower value; second, because individual proteins differ considerably in the per cent of nitrogen which they contain, some having as low as fifteen per cent, and a number having seventeen to eighteen per cent. Hence, to secure strict accuracy, different factors are needed for the different food materials; but inasmuch as calculations of food values made on average analyses are only approximately correct in any given case, the convenient factor 6.25 has been widely adopted, and is satisfactory if it be borne in mind that estimations of protein in food materials made in this way tend to indicate somewhat more protein than is probably available to the body. For such reasons as these, it is customary in experimental work, to compare the intake and output of nitrogen rather than to try to express that in food in terms of protein.

Fat is determined by extraction of the food material with ether, and hence is more accurately designated "ether extract." Besides true fat and fatty acids, this extract may contain other acids, waxes, coloring matter or other substances. Thus the amount of fat is exaggerated, especially in some food materials low in fat, such as fresh fruits and green vegetables, in which as much as fifty per cent of the ether extract may be substances other than fat. In cases where the amount of fat is relatively great, errors due to this cause are practically negligible.

Carbohydrates, as ordinarily reported, are estimated "by difference," that is, by subtracting the sum of the percentages of protein, fat, ash and water from one hundred. Here again, the results are only approximately accurate, partly because all the errors in the other estimations are charged against the carbohydrates, and partly because carbohydrates may be included which are not available for food, as woody fiber and certain gums.

Ash is obtained by burning off all the combustible substances and weighing the residue. It is chiefly significant in showing what proportion of a dry foodstuff is not available for fuel; consequently reports of total ash are not very important in dietary calculation. The nature of the mineral matter is, however, a matter of considerable importance, and while it is not necessary to calculate

the total amount of every one of the different mineral constituents in every dietary, familiarity with their distribution in food materials should be acquired by frequent reference to such data as in Tables XXVI and XXVII.

VITAMINES exist in very small quantities in food materials and their exact chemical composition is not yet known; they can, however, be extracted from the materials in which they occur by suitable chemical methods. The kind and the amount of any vitamine in a given food material are at present most satisfactorily determined by experiments in feeding animals. When any one of the vitamines is withheld from the diet there is a loss of health with characteristic symptoms of the deficiency disease associated with such absence, and in case of two of the three known vitamines there is in the young animal interference with normal growth. By starting with a diet known to be lacking in just one vitamine, and adding to this different amounts of a food containing the lacking dietary essential, it is possible to find out just how much is needed to maintain a normal rate of growth. For example; a diet of casein, starch, butter fat, and suitable mineral elements, with water to drink, is adequate for a rat except for one vitamine. This lacking substance may be found in the tomato, and addition to the diet of half a gram of dried tomato per day will result in normal growth. When such information has been secured, the way is open for comparative studies of the amounts present in food materials. The same vitamine which served in the experiment just outlined is present in the carrot, one gram of suitably dried carrot serving to promote growth as well as one-half a gram of dried tomato. It is evident that one would draw from such an experiment the conclusion that the dried tomato is twice as rich as the carrot in this particular vitamine.

At the present time we recognize three vitamines, known by various names, (1) **The "A" Vitamine** (Fat-soluble A) sometimes called the Antixerophthalmic Vitamine; (2) **The "B" Vitamine** (Water-soluble B) or the Antineuritic Vitamine; (3) **The "C" Vitamine** (Water-soluble C) or the Antiscorbutic Vitamine.

THE FUNCTIONS OF FOOD.

The human body is a working machine, for which the fuel is food; it is an aggregation of living cells in which chemical changes are continually occurring, old material being thrown out to be replaced by new, which must be obtained from food; it is an organism

capable of building itself up from a single cell by conversion of food into body substance. It cannot, however, perform these functions without the proper balance of chemical compounds in all its tissues and fluids, and these compounds must be derived from a well-balanced diet. It may be said, therefore, that food has three important functions; namely, **to supply energy; to build body substance; and to regulate body processes.**

Food as a Source of Energy.

Proteins, fats and carbohydrates have the great common function of supplying the body with energy, which is the *power to do work*. This power is manifested in various ways, such as motion, heat, light, chemical or electrical activity. Our bodies are energy-transformers; their sole source of energy is food, and the most important result of the changes which foods undergo in the body is the evolution of energy in the form of work or heat. The work may be *internal*, as that of digestion, respiration, circulation, and muscular tension; or *external*, as in walking, running, or other muscular activity; the heat is chiefly a by-product of these various forms of work, but under certain circumstances, when heat loss is very rapid, energy may be converted into this form, to maintain the normal body temperature.

Since energy is easily transformed into heat, and this form is readily measured, a heat unit, the Calorie, has been adopted as the most convenient measure of energy. One Calorie is the amount of heat required to raise one kilogram (2.2 pounds) of water one degree Centigrade, or one pound of water four degrees Fahrenheit. Expressed in terms of work, it represents that required to lift one pound through the distance of 3087 feet, or 3087 foot-pounds.

The total energy value of each of the fuel foodstuffs (proteins, fats, and carbohydrates) has been determined by burning it in a calorimeter in pure oxygen, under such conditions that all the heat evolved is taken up by water surrounding the vessel in which the combustion occurs, and the increase in the temperature of the water measured by a delicate thermometer. In the body, combustion of protein is not quite so complete as in the calorimeter, and there are usually some losses due to failure of complete digestion of each kind of foodstuff, so that the available energy is somewhat less than the total energy value. In a healthy human

being, on an ordinary mixed diet, the fuel value of each foodstuff is on the average as follows: *

Protein, 4 Calories per gram,
Fat, 9 Calories per gram,
Carbohydrate, 4 Calories per gram.

Knowing the percentage composition of any food material, it is possible by means of these factors to compute its probable yield of energy to the body, as illustrated in Problem III, page 60.

Food as Building Material.

During the period of growth, which extends over the first twenty-five years of life, the body increases in weight usually from fifteen to twenty times. The source of the new body substance is food. In adult life, growth ceases, except in special cases, as when the body tissues have been depleted through disease or accident or where unusual exercise or pregnancy induces muscle formation; but in all living substance there is a constant loss of old material, to be replaced by new, small in amount, but essential to life. Hence there is never a time when building material can be dispensed with entirely, though it becomes less prominent after maturity. The foodstuffs which play a specific rôle in body building are the proteins and certain ash constituents, the most important being phosphorus, iron, and calcium.

Protein supplies nitrogen, essential for the protoplasm of all active cells and especially for the making of muscle. It is also a source of sulphur for body protein.

Phosphorus, like nitrogen, is essential to the development of every cell. It is also one of the chief elements giving rigidity to the bones. It occurs in chemical combination with protein and fat in milk and eggs, as simpler organic compounds in grains and legumes, and chiefly as inorganic salts in meat, fish, fruits, and green vegetables. While all kinds are useful, the organic forms, especially phospho-proteins and phospho-fats, seem to be used to the best advantage by the young.

Iron is an essential element of the hemoglobin of the blood and of all cell nuclei. Oxidation and cell development are therefore

* Most of the calculations of fuel value previously made are slightly higher than those in this book, owing to the use of Rubner's factors (protein 4.1, fat 9.3, carbohydrate, 4.1) which are now known to allow too little for losses in digestion.

dependent on its presence. Food iron is in the form of iron-protein compounds, found especially in egg yolk, green vegetables, fruits, legumes and whole grains.

Calcium as building material is found chiefly in the bones and teeth. It occurs in food in combination with protein, as in milk, or as inorganic salts in whole grains, legumes, fruits, and vegetables.

Food in the Regulation of Body Processes.

The chief constituents of food participating in the regulation of body processes are the ash constituents, vitamines, and water.

The most important mineral elements besides phosphorus, iron, calcium, and sulphur are magnesium, potassium, sodium, iodine, and chlorine. Upon the presence of the salts formed by these elements depend the neutrality of the blood, the acidity or alkalinity of the digestive juices, the solvent power and osmotic pressure of different body fluids, and the elasticity and irritability of nerve and muscle. They form such combinations as tend to protect the body against harmful substances when present and to aid in their elimination.

Vitamines are essential to growth in the young and to good health in all.

The "A" Vitamine (Fat-soluble A) is necessary for growth. Furthermore, animals deprived of it for some time develop a characteristic eye disease known as xerophthalmia in which the eyes become inflamed, swell shut, and finally go blind; hence it is sometimes called the Antixerophthalmic Vitamine. Other signs of failing health are loss in weight and deterioration of the hairy coat. Human beings also develop xerophthalmia under certain dietary restrictions. These things lead us to believe that this vitamine is very essential to human health. It occurs in liberal amounts in such foods as egg yolk, milk, cream, butter, fish oils, and green leaves, though it is found in various animal and plant foods in small quantities.

The "B" Vitamine (Water-soluble B) is needed for growth in considerable amounts. When it is absent from the diet, a disease results known as beri-beri in human subjects and polyneuritis in other animals. This vitamine, on account of its preventive and curative properties, is also known as the Antineuritic Vitamine. It occurs in egg yolk, milk, whole grains and many vegetables and fruits.

The "C" Vitamine (Water-soluble C) is not so essential to

growth as the other two vitamines, but is equally important for health. Human beings deprived of it only a few weeks develop scurvy; accordingly this vitamine is known as the Antiscorbutic Vitamine. It is found in various fresh fruits and vegetables, especially worthy of mention being oranges, lemons, tomatoes, and potatoes. It is readily affected by heat, by aging, by drying, and by alkalies; hence the desirability of avoiding possible deficiency through knowing which foods retain their antiscorbutic property best, or by having a variety of fresh foods in the diet.

FOOD REQUIREMENT.

The Energy Requirement of Normal Adults.

The first requirement of the body is for energy to replace that lost in its constant internal work and more or less irregular and variable external work. The greater the amount of muscular work, the higher the energy requirement. By use of the following tables it is possible to determine with considerable accuracy the energy requirement of any adult.* Tables I and II give the average

TABLE I

Table of Weight and Height for Men at Different Ages †

Height	19 yrs.	20	21–22	23–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59
5 ft.	107	110	114	118	122	126	128	131	133	134	135
1 in.	112	115	118	121	124	128	130	133	135	136	137
2 "	117	120	122	124	126	130	132	135	137	138	139
3 "	121	124	126	128	129	133	135	138	140	141	142
4 "	124	127	129	131	133	136	138	141	143	144	145
5 "	128	130	132	134	137	140	142	145	147	148	149
6 "	132	133	136	138	141	144	146	149	151	152	153
7 "	136	137	140	142	145	148	150	153	155	156	158
8 "	140	141	143	146	149	152	155	158	160	161	163
9 "	144	145	147	150	153	156	160	163	165	166	168
10 "	148	149	151	154	157	161	165	168	170	171	173
11 "	153	154	156	159	162	166	170	174	176	177	178
6 ft.	158	160	162	165	167	172	176	180	182	183	184
1 "	163	165	167	170	173	178	182	186	188	190	191
2 "	168	170	173	176	179	184	189	193	195	197	198
3 "	173	175	178	181	184	190	195	200	202	204	205
4 "	178	180	183	186	189	196	201	206	209	211	212
5 "	183	185	188	191	194	201	207	212	215	217	219

In ascertaining height—measure in shoes; stand erect, and press measuring rod down against scalp. Weigh yourself in indoor clothing and shoes. Subtract one inch for height, if measured in shoes.

* For detailed discussion of the factors influencing the energy requirement and interpretation of the terms indicating different degrees of muscular activity consult Sherman's Chemistry of Food and Nutrition, or Lusk's Science of Nutrition.

† Private communication, printed by permission of Thomas D. Wood, M. D., Professor of Physical Education, Columbia University.

TABLE II.

TABLE OF WEIGHT AND HEIGHT FOR WOMEN AT DIFFERENT AGES *

Height	19 yrs.	20	21–22	23–24	25–29	30–34	35–39	40–44	45–49	50–54
4 ft. 10 in.	98	102	106	110	113	116	119	123	126	129
11 "	103	107	109	112	115	118	121	125	128	131
5 ft.	109	112	113	115	117	120	123	127	130	133
1 "	113	115	116	118	119	122	125	129	132	135
2 "	116	118	119	120	121	124	127	132	135	138
3 "	120	121	122	123	124	127	130	135	138	141
4 "	123	124	125	126	128	131	134	138	141	144
5 "	126	127	128	129	131	134	138	142	145	148
6 "	129	130	131	133	135	138	142	146	149	152
7 "	131	133	135	137	139	142	146	150	153	156
8 "	135	137	139	141	143	146	150	154	157	161
9 "	138	140	142	145	147	150	154	158	161	165
10 "	141	143	145	148	151	154	157	161	164	169
11 "	145	147	149	151	154	157	160	164	168	173
6 ft.	150	152	154	156	158	161	163	167	171	176

In ascertaining height—measure yourself in shoes; stand erect, and press measuring rod down against scalp. Weigh yourself in indoor clothing and shoes. If shoes have sensible heels, subtract one inch for height; if heels are "high," subtract two inches.

weight in proportion to height, for men and women of different ages, and Tables III, IV, and V afford data for calculating the energy requirement according to this weight. Thus a man weighing 70 kilograms, at light exercise, will require 2450–2800 Calories according to Table III, or if we state his day's activity more definitely, assuming that he sleeps 7 hours, works at his desk 10 hours, does light exercise equivalent to walking 7 hours, we may then calculate his requirement according to Table IV:

Sleeping,	7 × 65 Calories=	455 Calories.
Sitting,	10 × 100 Calories=	1000 Calories.
Exercise,	7 × 170 Calories=	1190 Calories.
Total for day,		2645 Calories.

If the subject under consideration is an adult of normal physique but weighs more or less than 70 kilograms, the total energy requirement is calculated as proportional to weight. Thus for a person of 55 kilograms (man or woman), with the same degree of activity, the proportional energy requirement would be 2078 Calories. In the strictest sense the smaller subject would probably have a somewhat larger energy output per unit of weight, as metabolism is more nearly proportional to surface than to weight.

* Private communication, printed by permission of Thomas D. Wood, M. D., Professor of Physical Education, Columbia University.

TABLE III.

DAILY ENERGY ALLOWANCE PER UNIT OF BODY WEIGHT FOR YOUNG AND MIDDLE AGED ADULTS.

(Approximate Averages.)

	Calories per Kilogram	Calories per Pound
Without Exercise:	30–35	14–16
With Light Exercise	35–40	16–18
With Moderate Exercise	40–45	18–20
With Hard Muscular Labor	45–50	20–23
With Very Severe Labor	50–60	23–27

TABLE IV.

ENERGY EXPENDITURE PER HOUR UNDER DIFFERENT CONDITIONS OF MUSCULAR ACTIVITY.*

Form of Activity	Calories per Hour		
	Per 70 Kilograms (Average Man)	Per Kilogram	Per Pound
Sleeping	65	0.93	0.43
Awake lying still	77	1.10	0.50
Sitting at rest	100	1.43	0.65
Reading aloud	105	1.50	0.69
Standing relaxed	105	1.50	0.69
Hand sewing	111	1.59	0.72
Standing at attention	115	1.63	0.74
Knitting (23 stitches per minute on sweater)	116	1.66	0.75
Dressing and undressing	118	1.79	0.81
Singing	122	1.74	0.79
Tailoring	135	1.93	0.88
Typewriting rapidly	140	2.00	0.91
Ironing (with five-pound iron)	144	2.06	0.93
Dishwashing (plates, bowls, cups and saucers)	144	2.06	0.93
Sweeping bare floor (38 strokes per minute)	169	2.41	1.09
Bookbinding	170	2.43	1.10
"Light exercise"	170	2.43	1.10
Shoe making	180	2.57	1.17
Laundry work (towels rubbed on a board without water, 35 times per minute)	182	2.60	1.18
Walking slowly (2.6 miles per hour)	200	2.86	1.30
Carpentry, metal working, industrial printing	240	3.43	1.56
"Active exercise"	290	4.14	1.88
Walking moderately fast (3.75 miles per hour)	300	4.28	1.95
Stoneworking	400	5.71	2.60
"Severe exercise"	450	6.43	2.92
Sawing wood	480	6.86	3.12
Swimming	500	7.14	3.25
Running (5.3 miles per hour)	570	8.14	3.70
"Very severe exercise"	600	8.57	3.90
Walking very fast (5.3 miles per hour)	650	9.28	4.22

* Calculated from data from the following sources, taking 100 Calories per man per hour as the standard for "quiet living":

Sherman, Chemistry of Food and Nutrition, p. 186, (Revised Edition, 1918).

Benedict and Johnson, Energy Loss of Young Women During the Muscular

TABLE V.

DAILY ENERGY REQUIREMENT ACCORDING TO OCCUPATION.

(Approximate Averages.)

Men	Calories per Kilogram	Calories per 70 Kilograms (per Man)
Tailor	33–37	2300–2600
Weaver	34–39	2400–2750
Shoemaker	38–42	2700–2950
Bookbinder	40–41	2800–2850
Metalworker	48–56	3350–3950
Carpenter	40–50	2800–3500
Farm laborer	45–60	3150–4200
Painter	50–54	3500–3800
Excavator	60–70	4200–4900
Stoneworker	66–67	4600–4700
Lumberman	70–76	4900–5300
Women	**Calories per Kilogram**	**Calories per 56 Kilograms (per Woman)**
Hand sewer	27–30	1500–1700
Machine sewer	32–40	1800–2250
Bookbinder	38–40	2100–2250
Waitress	43–53	2400–3000
Washerwoman	50–60	2800–3350

THE ENERGY REQUIREMENT OF CHILDREN.

The energy requirement of children is higher in proportion to body weight than that of adults. In youth the metabolism is more intense and there is a great storage of fool materials in the body in the process of growth, as is evident from the fact that a baby doubles in weight in the first 180 days of life. The muscular activity of children is also frequently greater than that of adults, so that their food requirement may be increased further in this way.

To calculate the energy requirement of any child, it is necessary to know the requirements per unit of weight at different stages of growth, *i. e.*, different ages, and the weight of the normal child at corresponding periods. Such data will be found in Tables VI–XI. Thus a normal boy, five years old, 42 inches high, should weigh 41 pounds or 18.6 kilograms, and will require at least 80 Calories per kilogram, making a total per day of 1488 Calories.

Activity of Light Housework, Proceedings of the American Philosophical Society, Vol. 58 (1919), pp. 89–96.

Langworthy and Barott, Energy Expenditure in Household Tasks, American Journal of Physiology, Vol. 52 (1920), pp. 400–408.

With more than moderate activity, as much as 90 Calories per kilogram may be required, a total of 1674 per day.

If a child is below normal weight, he should not be fed according to his present weight, but regarded as undernourished and treated as nearly as possible in harmony with what his weight ought to be. Standards for children should in general be considered as representing the minimum rather than the maximum food requirement.

TABLE VI.

AVERAGE DAILY ENERGY REQUIREMENT OF CHILDREN PER UNIT OF BODY WEIGHT.

Age in Years	Calories per Kilogram	Calories per Pound
Under 1	100	45
1–2	100–90	45–40
2–5	90–80	40–36
6–9	80–70	36–32
10–13	75–65	34–30
14–17	65–50	30–23

TABLE VII.

AVERAGE TOTAL ENERGY REQUIREMENT OF CHILDREN.*

AGE	CALORIES PER DAY	
	Boys	Girls
Under 2	900–1200	900–1200
2–3	1000–1300	980–1280
3–4	1100–1400	1060–1360
4–5	1200–1500	1140–1440
5–6	1300–1600	1220–1520
6–7	1400–1700	1300–1600
7–8	1500–1800	1380–1680
8–9	1600–1900	1460–1760
9–10	1700–2000	1550–1850
10–11	1900–2200	1650–1950
11–12	2100–2400	1750–2050
12–13	2300–2700	1850–2150
13–14	2500–2900	1950–2250
14–15	2600–3100	2050–2350
15–16	2700–3300	2150–2450
16–17	2700–3400	2250–2550

* From Sherman and Gillett's Food Allowances for Healthy Children.

TABLE VIII.

AVERAGE WEIGHT AND HEIGHT OF CHILDREN FROM BIRTH TO THE FIFTH YEAR *

AGE	BOYS		GIRLS	
	HEIGHT	WEIGHT	HEIGHT	WEIGHT
	Inches	*Pounds*	*Inches*	*Pounds*
Birth	20.6	7.6	20.5	7.16
3 mos.	23 1/2	13	....	....
6 "	26 1/2	18	25 7/8	16 3/4
7 "	27 1/4	19 1/8	26 1/2	17 3/8
8 "	27 5/8	19 3/4	27	18 1/4
9 "	28 1/8	20 3/8	27 5/8	19 1/8
10 "	28 1/2	20 7/8	27 7/8	19 1/2
11 "	29	21 3/8	28 3/8	20 1/8
12 "	29 3/8	21 7/8	28 7/8	20 3/4
13 "	29 7/8	22 7/8	29 3/8	21
14 "	30 1/4	23	29 1/2	21 5/8
15 "	30 3/4	23 5/8	30 1/8	21 7/8
16 "	31 1/8	24 1/8	30 1/2	22 5/8
17 "	31 3/8	24 1/2	30 3/4	22 7/8
18 "	31 3/4	24 5/8	31 1/8	23 3/8
19 "	32 1/4	25 1/2	31 1/2	23 3/4
20 "	32 5/8	25 3/4	32	24 1/8
21 "	32 7/8	25 3/4	32 1/4	24 3/4
22 "	33 1/4	26 7/8	32 5/8	25 1/4
23 "	33 5/8	27	32 7/8	25 5/8
24 "	33 3/4	27 1/8	33 3/8	26 3/8
25 "	34	27 7/8	33 3/4	26 7/8
26 "	34 1/8	28 1/4	33 7/8	27 1/4
27 "	34 3/4	29	33 7/8	27 1/4
28 "	35 1/8	29 1/8	34 5/8	27 3/4
29 "	35 3/8	29 1/4	34 3/4	27 3/4
30 "	35 3/8	29 1/2	34 7/8	28 1/4
31 "	35 1/2	30 1/2	35 1/8	28 3/4
32 "	36	30 5/8	35 3/8	29
33 "	36 1/8	30 5/8	35 5/8	29 1/8
34 "	36 1/2	31 1/8	36 1/2	30 1/8
35 "	36 3/4	31 7/8	36 1/2	30 1/4
36 "	37 1/8	32 1/4	36 3/4	30 1/2
37 "	37 3/8	32 1/4	36 3/4	30 3/4
38 "	37 1/2	32 3/8	37	31
39 "	37 7/8	33 1/8	37 1/4	31 5/8
40 "	38 1/2	33 1/2	37 1/2	32
41 "	38 5/8	33 5/8	37 3/4	32 1/4
42 "	38 5/8	33 3/4	38	32 1/2
43 "	38 3/4	33 3/4	38 1/4	32 3/4
44 "	38 7/8	34 1/4	38 1/2	33
45 "	39	34 1/2	38 1/2	33 1/4
46 "	39	34 3/4	38 3/4	33 1/2
47 "	39 1/4	35 3/4	38 7/8	33 1/2
48 "	39 1/2	35 7/8	39	33 3/4
5 yrs.	41.6	41.1	41.3	39.7

* Reprinted by permission of the Children's Bureau, United States Department of Labor.

TABLE IX.

Average Weight and Height of Boys at Different Ages.*

Height inches.	5 yrs.	6 yrs.	7 yrs.	8 yrs.	9 yrs.	10 yrs.	11 yrs.	12 yrs.	13 yrs.	14 yrs.	15 yrs.	16 yrs.	17 yrs.	18 yrs.
39	35	36	37											
40	37	38	39											
41	39	40	41											
42	41	42	43	44										
43	43	44	45	46										
44	45	46	46	47										
45	47	47	48	48	49									
46	48	49	50	50	51									
47		51	52	52	53	54								
48		53	54	55	55	56	57							
49		55	56	57	58	58	59							
50			58	59	60	60	61	62						
51			60	61	62	63	64	65						
52			62	63	64	65	67	68						
53				66	67	68	69	70	71					
54				69	70	71	72	73	74					
55					73	74	75	76	77	78				
56					77	78	79	80	81	82				
57						81	82	83	84	85	86			
58						84	85	86	87	88	90	91		
59						87	88	89	90	92	94	96	97	
60						91	92	93	94	97	99	101	102	
61							95	97	99	102	104	106	108	110
62							100	102	104	106	109	111	113	116
63							105	107	109	111	114	115	117	119
64								113	115	117	118	119	120	122
65									120	122	123	124	125	126
66									125	126	127	128	129	130
67									130	131	132	133	134	135
68									134	135	136	137	138	139
69									138	139	140	141	142	143
70										142	144	145	146	147
71										147	149	150	151	152
72										152	154	155	156	157
73										157	159	160	161	162
74										162	164	165	166	167
75											169	170	171	172
76											174	175	176	177

* Reprinted by permission of Thomas D. Wood, M. D., Professor of Physical Education, Teachers College, Columbia University.

TABLE X.

Average Weight and Height of Girls at Different Ages.*

Height inches.	5 yrs	6 yrs.	7 yrs.	8 yrs.	9 yrs.	10 yrs.	11 yrs.	12 yrs.	13 yrs.	14 yrs.	15 yrs.	16 yrs.	17 yrs.	18 yrs.
39	34	35	36											
40	36	37	38											
41	38	39	40											
42	40	41	42	43										
43	42	42	43	44										
44	44	45	45	46										
45	46	47	47	48	49									
46	48	48	49	50	51									
47		49	50	51	52	53								
48		51	52	53	54	55	56							
49		53	54	55	56	57	58							
50			56	57	58	59	60	61						
51			59	60	61	62	63	64						
52			62	63	64	65	66	67						
53				66	67	68	68	69	70					
54				68	69	70	71	72	73					
55					72	73	74	75	76	77				
56					76	77	78	79	80	81				
57						81	82	83	84	85	86			
58						85	86	87	88	89	90	91		
59						89	90	91	93	94	95	96	98	
60							94	95	97	99	100	102	104	106
61							99	101	102	104	106	108	109	111
62							104	106	107	109	111	113	114	115
63							109	111	112	113	115	117	118	119
64								115	117	118	119	120	121	122
65								117	119	120	122	123	124	125
66								119	121	122	124	126	127	128
67									124	126	127	128	129	130
68									126	128	130	132	133	134
69									129	131	133	135	136	137
70										134	136	138	139	140
71										138	140	142	143	144
72											145	147	148	149

* Reprinted by permission of Thomas D. Wood, M. D., Professor of Physical Education, Columbia University.

TABLE XI.

AVERAGE RATE OF GROWTH OF BOYS AND GIRLS AT DIFFERENT AGES (MANNY).

AGE	BOYS		GIRLS	
	Increase per Year	Increase per Week	Increase per Year	Increase per Week
	Pounds	Ounces	Pounds	Ounces
6 months.	16.90	5.19	16.68	5.11
1 year	9.00	2.75	8.60	2.65
2 "	6.00	1.83	5.70	1.76
3 "	4.70	1.45	4.50	1.38
4 "	3.80	1.16	4.00	1.23
5 " 6 mos.	4.13	1.27	3.87	1.20
6 " 6 "	4.00	1.23	3.60	1.09
7 " 6 "	4.30	1.34	4.30	1.34
8 " 6 "	5.00	1.55	4.80	1.48
9 " 9 "	5.10	1.59	4.90	1.52
10 " 6 "	5.80	1.80	5.50	1.69
11 " 6 "	5.30	1.62	6.60	2.05
12 " 6 "	6.20	1.91	9.20	2.82
13 " 6 "	7.90	2.43	10.00	3.07
14 " 6 "	10.40	3.21	9.60	2.96
15 " 6 "	12.20	3.77	8.40	2.57
16 " 6 "	13.60	4.20	5.60	1.73

THE ENERGY REQUIREMENT OF THE AGED.

In old age, the activity of the cells diminishes, decreasing the rate of metabolism and the amount of internal work. External work is usually less than in middle life, and the ability of the body to deal with an excess of food is lessened. For these reasons, the energy requirement per unit of weight gradually declines as old age comes on, usually after the 60th year, and sometimes earlier. While senility cannot be measured exactly in years, we may, for convenience, divide this period into three parts, (1) from 60 to 70; (2) from 70 to 80; (3) from 80 to the end of life, as a basis for estimating food requirements.

The energy requirement is most satisfactorily calculated by using one of the methods suggested for obtaining the energy requirement of an adult * when the weight of the individual is known and suitable allowance is made for lessened activity. After the requirement has been calculated as if for a middle aged person, a deduction should be made for the decreased metabolism according to the following table, adapted from suggestions by Von Noorden.

* Cf. Tables I–V.

TABLE XII.

VON NOORDEN'S REDUCTION IN ENERGY REQUIREMENT IN OLD AGE.

Age in Years	Per Cent of Reduction
60–70	10
70–80	20
80—	30

THE PROTEIN REQUIREMENT.

The protein requirement cannot be stated with the same exactness as the energy requirement. We know that some proteins will support growth; others serve merely to maintain the body at constant weight, and still others will by themselves neither maintain nitrogen equilibrium nor support growth. It is necessary therefore to choose proteins with some care if we try to limit the amount very closely, especially in childhood when they are so important for growth; or to take food materials of many kinds, so that different types of protein are represented in the diet.

The total amount of protein required is independent of the amount of muscular activity. In the adult it depends rather upon the amount of active tissue in the body. In the case of an adult man of ordinary physique weighing seventy kilograms, while the energy requirement may vary from 2400 to 4000 Calories according to occupation, a protein supply of about one gram per kilogram of body weight per day will be liberal. In the child the requirement is much higher in proportion to weight, owing to the use of protein as building material, especially for the muscles. At the time of most rapid growth nature provides about two and one-half grams of protein per kilogram of body weight per day. This is about ten per cent of the fuel requirement per kilogram, and it will be observed that a man at moderately active work, taking one gram of protein per kilogram is also getting about ten per cent of his calories in the form of protein. In old age, when new body substance is not being built, the existing cells are less active and the body is less capable of disposing of an excess, so that less than one gram per kilogram of body weight is needed, we find that there is also a decreased demand for total fuel, affording again a parallelism between energy and protein requirement. It seems safe to say, therefore, that except at complete rest from ten to fifteen per cent of the total fuel in the form of protein is sufficient for any age when the energy requirement is fully met.

When the protein in the diet is excessively high, it raises the metabolism without any beneficial and possibly with harmful

effects. It is at least a wasteful excess, and should be avoided. On the other hand, while it is possible to satisfy the requirements for nitrogen with less than ten per cent of the fuel in the form of protein, such a supply does not afford much reserve for such emergencies as loss in digestion, or inability of the body to utilize to good advantage the type of protein supplied, and is usually inadvisable.

The Fat and Carbohydrate Requirement.

Assuming that from ten to fifteen per cent of the total fuel is derived from protein in satisfying the nitrogen requirement of the body, the remainder of the daily supply will have to be provided from carbohydrates and fats. The amount of fat which can be digested differs with the individual and the form in which it is taken, but the average man's maximum capacity for digestion of fat is about 200 grams per day, and he does not seem to maintain his best health with less than about 75 grams (2.5 ounces) of fat per day. Within these limits, much variation is possible. The amount of carbohydrates which can be taken to advantage depends largely upon the form, starch being capable of good digestion in amounts up to or even above 500 grams per day. The assimilation limit for sugar varies with the kind, but is lower than that for starch.

Under certain circumstances carbohydrates have a greater protein-sparing power than fats, but unless more than one-half of the total calories of the day's ration be derived from fats the protein-sparing action of a fat calorie or a carbohydrate calorie is practically the same. In the ordinary diet of a healthy individual the carbohydrates tend to predominate, so that there is seldom necessity for estimating fat and carbohydrate separately; the relative proportions will be determined largely by questions of bulk, ease of digestion, and the need for the fat-soluble vitamine, which may be associated with the food fat. In special cases it is sometimes necessary to calculate each separately, as in diabetes where the foodstuffs may all have to be carefully measured. The tables of food values will make these calculations comparatively simple.

The Ash Requirement.

In a diet selected from a wide range of food materials, or a more limited one containing some kind of fruit and some green vegetable

every day and having milk as a prominent constituent, the needs of the individual for body-building and body-regulating ash constituents will probably be satisfactorily met. The ash requirement has now been determined for calcium and phosphorus with the same accuracy as the protein requirement. There is abundant evidence that attention must be paid to the mineral elements of the diet, some of which are as indispensable as protein even though needed in much smaller amounts. The ones which it seems most unwise to leave to chance are phosphorus, iron, and calcium, diets which supply protein and fuel in adequate amounts not necessarily carrying a sufficiency of all of these. Generally diets having enough calcium and iron will also supply sufficient phosphorus. The quantities per day believed to be desirable in feeding a family are as follows:

TABLE XIII.

DIETARY STANDARDS FOR CALCIUM, PHOSPHORUS, AND IRON.

CALCIUM		
	As Oxide (CaO) Grams	As Element (Ca) Grams
Per 3000 Calories, or per man	1.0	0.67
Per 100 Calories	0.032*	0.023*
PHOSPHORUS		
	As Pentoxide (P_2O_5) Grams	As Element (P) Grams
Per 3000 Calories, or per man	3.0	1.32
Per 100 Calories	0.10	0.044
IRON		
	As Element (Fe) Grams	As Element (Fe) Milligrams
Per 3000 Calories, or per man	0.015	15.0
Per 100 Calories	0.0005	0.5

As the calculation of the ash constituents is laborious, it is often simpler to see that the foods rich in these elements are abundantly represented, *i. e.*, milk, eggs, whole grains, peas, beans, green vegetables, and fruit, any excess of ash not being likely to do harm.

When for any reason there is scarcity of the above foods, or a diet especially rich in any particular ash constituent is desired, the quantitative estimations of the various elements should be made by means of Tables XXVI and XXVII.

* For adults, for children from one to fifteen years of age, allow one gram of calcium (Ca) or 1.4 grams calcium oxide (CaO) per capita per day regardless of age.

The Vitamine Requirement.

The necessity for at least three different vitamines in the diet has been demonstrated by experimental work with animals. It has also been confirmed for human beings by the cure of beri-beri, a disease due to lack of the "B" vitamine (Water-soluble B or the antineuritic vitamine); by the cure of scurvy, a disease due to lack of the "C" vitamine (Water-soluble C or the antiscorbutic vitamine); and apparently by the cure of xerophthalmia, a disease produced experimentally in some animals by withholding from the diet the "A" vitamine (Fat-soluble A or the antixerophthalmic vitamine), and reported as cured in children subsisting on an inadequate diet by adding to their ration foods rich in this vitamine, such as butter fat and chicken livers.

Other evidence that health depends on a suitable amount of each of these vitamines is afforded by experiments showing accelerated rate of growth in infants when the amount of the "B" vitamine in their diet is increased, and general improvement in their physical condition through increase in the amount of the "C" vitamine when, though not having acute scurvy, they have been receiving too little of this dietary essential in their food. The suggestion has also been made that a lack of the "A" vitamine may be a contributing factor in the susceptibility of the poor and undernourished to tuberculosis.

There is, then, abundant evidence as to the need for certain amounts of these known vitamines, but scientific investigation has not yet gone far enough for any one to state definitely how much of each is required either for adults or children. On a diet which meets all other nutritive requirements and in which milk, vegetables, and some fresh food are a regular part of the menu there is little likelihood of deficiency in any of the vitamines. The "B" vitamine is so widely distributed in fruits and vegetables that a diet containing these in addition to milk will be adequate as regards this dietary factor. The "A" vitamine is also found in sufficient quantity in milk not deprived of its natural fat, in eggs, butter, and green leaves; wherefore the presence of these in the diet is a guarantee of safety so far as this vitamine is concerned. The "C" vitamine is more readily destroyed by heat, aging, and drying than the other vitamines, from which it follows that the best general protection against shortage is in a fairly regular supply of

fresh food, and especially of fresh fruits and vegetables. Some information about the distribution of these vitamines in different foods may be secured from the following table:

TABLE XIV.

DISTRIBUTION OF VITAMINES IN INVESTIGATED FOOD MATERIALS.

\+ indicates that the vitamine is present.
++ " " " " " " in considerable amount.
+++ " " " " " " " large amount.
+(?) " conflicting reports as to its presence.
— " that the vitamine is absent or nearly so.
× " " " " has not been determined.

Source	A	B	C
Almonds	+	+	×
Apples	×	++	++
Bananas	+(?)	+	+
Barley, whole	+	++	×
Beans, kidney	×	+++	×
navy	×	+++	—
soy	+	+++	—
Beets	—	+	+
Brain	+	++	+(?)
Brazil nuts	×	++	×
Bread, white (yeast)	—	+	—
whole wheat (yeast)	+	++	—
Butter	+++	—	—
Cabbage, fresh raw	++	+++	+++
cooked	++	++	+
dried	++	+++	—(?) Depends on process
Carrots, fresh raw	++	+	+
cooked	++	+	+(?) Depends on process
Cauliflower	+	++	×
Celery	×	++	×
Chard	+	+	×
Cheese	++	++	—
Chestnuts	×	+	×
Coconut	+	++	×
Coconut oil	—	—	—
Codfish	+	+	+(?)
Codliver oil	+++	—	—
Corn oil	—(?)	—	—
Cottonseed oil	—(?)	—	—
Cream (see also milk)	+++	+	+(?)
Dandelion greens	++	++	+
Dasheens	—	+	+
Eggs	+++	+	—
Egg yolk	+++	+	—
Endive	+	×	×
Fat, beef	+	×	×
Filberts	×	++	×
Germinated legumes	+	++	+++
Grapefruit	×	++	++
Grape juice (commercial)	×	+	+

TABLE XIV—*Continued.*

Source	A	B	C
Grapes	×	+	+
Heart	+	+	+(?)
Herring	+	+	+(?)
Hickory nuts	×	++	×
Honey	—	+	—
Kidney	++	++	+(?)
Lard	—(?)	—	—
Lemon juice	—	++	+++
Limes	—	×	++
Lettuce	++	++	+++
Liver	++	++	+(?)
Maize, white	—	++	×
yellow	+	++	×
Milk, fresh	+++	++	+ Amount depends on cow's diet
condensed	++	+	+(?)
dried, skim	+	++	+(?) Depends on process
dried, whole	+++	++	+(?) Depends on process
skimmed	+	+	+ Amount depends on cow's diet
Meat, muscle	—	+(?)	+(?)
Nut margarines (vegetable fat)	—	—	—
Oats	+	++	—
Oleomargarine (animal fat)	+	—	—
Olive oil	—	—	—
Onions	×	++	++
Oranges	+	++	+++
Pancreas	—	+++	+(?)
Parsnips	—	++	×
Peanuts	+	++	×
Pears	—	+	×
Peas, dry	+	++	—
fresh	+	++	+++
Pecans	×	+	×
Pig heart	+	+	×
liver	+	+	×
Pine nuts	×	+	×
Potatoes, sweet	++	+	×
white, raw	+	++	+++
white, boiled 15 minutes	+	++	++
Prunes	×	+	—
Rice, polished	—	—	—
whole grain	+	++	—
Roe, fish	+	++	+(?)
Rutabaga	—	++	+++
Rye, whole grain	+	++	×
Spinach	+++	+++	+++
Squash, yellow	++	×	×
Sweetbreads (thymus gland)	—	—	—
Tomatoes	++	+++	+++
Turnips, swede	—	++	+++
Walnuts	×	++	×

TABLE XIV—*Continued.*

Source	A	B	C
Whale oil	++	×	—
Wheat kernel	+	++	—
embryo	++	+++	—
bran	—	+	—
Whey	+(?)	++	+(?)
Yeast	—	+++	—

PART II.

PROBLEMS IN DIETARY CALCULATION.

PROBLEM I.

STUDIES IN WEIGHT, MEASURE AND COST OF SOME COMMON FOOD MATERIALS.

In the following table (XV) are grouped those common food materials which are purchased and used by measure more frequently than by weight. The food values are given for all the customary units of weight: namely, the gram for scientific accuracy; the ounce for the small family; and the pound for the larger institution; the data being calculated, unless otherwise stated, from Bulletin 28, Office of Experiment Stations, U. S. Department of Agriculture, using the Atwater factors for energy values. Since estimates of food values made on average proximate analyses cannot be absolutely accurate, the number of digits in this table (and in Tables XXIII, XXIV, and XXV) has been limited to one or two decimal places except on the gram, where the food values serve also to indicate the percentage composition as given in the original report. These can be used in cases where the closest concordance in results is desired.

For weighing the food materials, a Harvard Trip Scale with weights from one gram to one-half kilogram will be found most satisfactory, although any reliable household scale accurate to one-fourth ounce can be used. A number of standard or 100-Calorie portions of food materials representing the different classes of foodstuff should be weighed, carefully measured, and the result recorded in the blank space provided in the measure column of the tables. The total weight of the market unit, as the quart, can or package, should also be recorded in the blank space under the data on food values, and the cost of this and the 100-Calorie portion recorded in the cost column. Other useful data are the weight of one cupful or one tablespoonful, etc., of foods used by these measures in cookery, such as flour, sugar, butter, and milk. Comparison of the cost of 100-Calorie portions will give a true idea of

the relative economy of the different food materials as sources of fuel, and will save much time in dietary calculation. A complete record of a food material will appear as follows:

EXAMPLE OF A FOOD RECORD.

Food Material	No.	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars	Measure
		lb.	oz.	gms.						
Bread, white, miscellaneous.				1	0.093	0.012	0.527	2.59		
			1		2.63	0.34	14.94	73.4	*0.0041*	
		1			42.18	5.44	239.05	1174	*0.0666*	
	1		1.36	38.6	3.6	0.46	20.39	100	*0.0056*	*1 thick slice*
			12.00	*340.0*	*31.56*	*4.08*	*179.28*	*880*	*0.05*	*1 loaf*

TABLE XV.

FOOD VALUES OF FOOD MATERIALS REQUIRING STUDY OF WEIGHTS AND MEASURES, AND OF COMPARATIVE COST ON THE BASIS OF FUEL VALUE.

Calculated principally from Bulletin 28, Office of Experiment Stations, U. S. Department of Agriculture.

A. P. denotes "as purchased."
E. P. denotes "edible portion."
S. P. denotes "standard" or "100-calorie" portion.

The Per Cent of Refuse in common food materials is given in Table XVI.

When it is impractical to weigh certain food materials some idea of the relation between weight and measure may be gained by reference to Tables XIX and XX, or to "Feeding the Family," Rose, New York, 1916.

Food Material	S. P.	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars	Approximate Measure
		lb.	oz.	gms.						
Almonds,				1	0.115	0.302	0.095	3.56		
A. P.			1		3.26	8.56	2.69	100.9		
		1			52.16	136.96	43.09	1614		
	1		0.99	28.1	3.23	8.49	2.67	100		
Almonds,				1	0.210	0.549	0.173	6.47		
E. P.			1		5.95	15.56	4.90	183.5		
		1			95.25	249.03	78.47	2936		
	1		0.54	15.5	3.24	8.48	2.67	100		
Apples,				1	0.016	0.022	0.661	2.91		
dried,			1		0.45	0.62	18.74	82.4		
A. P.		1			7.25	9.93	299.83	1318		
	1		1.21	34.4	0.55	0.75	22.74	100		

TABLE XV.

FOOD VALUES OF FOOD MATERIALS REQUIRING STUDY OF WEIGHTS AND MEASURES, AND OF COMPARATIVE COST ON THE BASIS OF FUEL VALUE.—*Continued.*

Food Material	E. P.	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars	Approximate Measure
		lb.	oz.	gms.						
Apples,				1	0.003	0.003	0.108	0.47		
fresh,			1		0.09	0.09	3.06	13.4		
A. P.		1			1.36	1.36	48.99	214		
	1		7.49	212.3	0.64	0.64	22.93	100		
Apples,				1	0.004	0.005	0.142	0.63		
fresh,			1		0.11	0.14	4.05	17.8		
E. P.		1			1.81	2.27	64.6	285		
	1		5.61	159.0	0.64	0.79	22.58	100		
Apricots,				1	0.047	0.010	0.625	2.78		
dried,			1		1.33	0.28	17.72	78.7		
A. P.		1			21.32	4.54	283.50	1260		
	1		1.27	36.0	1.69	0.36	22.50	100		
Apricots,				1	0.010		0.126	0.54		
fresh,			1		0.28		3.57	15.4		
A. P.		1			4.54		57.16	247		
	1		6.48	183.8	1.84		23.16	100		
Apricots,				1	0.011		0.134	0.58		
fresh,			1		0.31		3.80	16.4		
E. P.		1			4.99		60.78	263		
	1		6.08	172.4	1.89		23.10	100		

TABLE XV.

FOOD VALUES OF FOOD MATERIALS REQUIRING STUDY OF WEIGHTS AND MEASURES, AND OF COMPARATIVE COST ON THE BASIS OF FUEL VALUE.—*Continued.*

Food Material	S. P.	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars	Approximate Measure
		lb.	oz.	gms.						
Asparagus,				1	0.015	0.001	0.028	0.18		
canned,			1		0.43	0.03	0.79	5.1		
A. P.		1			6.80	0.45	12.70	82		
	1		19.49	552.5	8.29	0.55	15.47	100		
Asparagus,				1	0.018	0.002	0.033	0.22		
fresh,			1		0.51	0.06	0.93	6.3		
A. P.		1			8.16	0.91	14.96	101		
	1		15.89	450.5	8.10	0.90	14.85	100		
Bacon,				1	0.095	0.594		5.73		
smoked,			1		2.69	16.84		162.3		
A. P.		1			43.09	269.44		2597		
	1		0.62	17.5	1.66	10.37		100		
Bacon,				1	0.105	0.648		6.25		
smoked,			1		2.98	18.37		177.2		
E. P.		1			48.63	412.98		2836		
	1		0.56	16	1.68	10.37		100		
Bananas,				1	0.008	0.004	0.143	0.64		
A. P.			1		0.23	0.11	4.05	18.1		
		1			3.62	1.81	64.80	290		
	1		5.51	156.2	1.24	0.62	22.32	100		

TABLE XV.

FOOD VALUES OF FOOD MATERIALS REQUIRING STUDY OF WEIGHTS AND MEASURES, AND OF COMPARATIVE COST ON THE BASIS OF FUEL VALUE.—*Continued.*

Food Material	S. P.	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars	Approximate Measure
		lb.	oz.	gms.						
Bananas				1	0.013	0.006	0.220	0.99		
E. P.			1		0.37	0.17	6.24	27.9		
		1			5.90	2.72	99.79	447		
	1		3.58	101.4	1.32	0.61	22.31	100		
Barley,				1	0.085	0.011	0.778	3.55		
pearled.			1		2.41	0.31	22.06	100.6		
		1			38.55	4.78	352.90	1610		
	1		0.99	28.2	2.38	0.31	21.78	100		
Beans,				1	0.225	0.018	0.596	3.45		
dried,			1		6.37	0.51	16.89	97.7		
A. P.		1			102.06	8.16	270.34	1564		
	1		1.02	29.0	6.53	0.52	17.30	100		
Beans,				1	0.040	0.003	0.146	0.77		
Lima,			1		1.112	0.09	4.14	21.9		
canned.		1			18.14	1.36	66.21	350		
	1		4.58	129.7	5.19	0.39	18.94	100		
Beans,				1	0.181	0.015	0.659	3.50		
Lima,			1		5.13	0.43	18.68	99.1		
dried.		1			82.10	6.80	298.92	1586		
	1		1.01	28.6	5.17	0.43	18.85	100		

TABLE XV.

FOOD VALUES OF FOOD MATERIALS REQUIRING STUDY OF WEIGHTS AND MEASURES, AND OF COMPARATIVE COST ON THE BASIS OF FUEL VALUE.—*Continued.*

Food Material	S. P.	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars	Approximate Measure
		lb.	oz.	gms.						
Beans,				1	0.032	0.003	0.099	0.55		
Lima,			1		0.91	0.09	2.81	15.6		
fresh,		1			14.52	1.36	44.91	250		
A. P.	1		6.40	181.5	5.81	0.54	17.96	100		
Beans,				1	0.071	0.007	0.220	1.23		
Lima,			1		2.02	0.20	6.24	34.8		
fresh,		1			32.21	3.17	99.79	557		
E. P.	1		2.88	81.5	5.79	0.57	17.93	100		
Beans,				1	0.021	0.003	0.069	0.39		
string,			1		0.59	0.09	1.96	11.0		
fresh,		1			9.52	1.36	31.30	176		
A. P.	1		9.11	258.4	5.43	0.78	17.83	100		
Beans,				1	0.023	0.003	0.074	0.42		
string,			1		0.65	0.09	2.10	11.8		
fresh,		1			10.40	1.36	33.60	189		
E. P.	1		8.50	241.0	5.54	0.72	17.83	100		
Beef, dried,				1	0.264	0.069		1.68		
salted,			1		7.48	1.96		47.5		
smoked,		1			119.75	31.30		760		
A. P.	1		2.11	59.7	15.74	4.11		100		

TABLE XV.

FOOD VALUES OF FOOD MATERIALS REQUIRING STUDY OF WEIGHTS AND MEASURES, AND OF COMPARATIVE COST ON THE BASIS OF FUEL VALUE.—*Continued.*

Food Material	Wt. P.	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars	Approximate Measure
		lb.	oz.	gms.						
Beef, dried,				1	0.300	0.065	0.004	1.80		
salted,			1		8.50	1.84	0.11	51.1		
smoked,		1			136.08	29.48	1.81	817		
E. P.	1		1.96	55.5	16.66	3.61	0.22	100		
Beef,				1	0.236	0.277		3.44		
roast,			1		6.69	7.85		97.4		
A. P.		1			107.05	125.64		1559		
	1		1.03	29.1	6.87	8.06		100		
Beef suet,				1	0.047	0.818		7.55		
A. P.			1		1.33	23.19		214.0		
		1			21.32	371.04		3425		
	1		0.47	13.2	0.62	10.83		100		
Beets,				1	0.013	0.001	0.077	0.37		
fresh,			1		0.37	0.03	2.18	10.6		
A. P.		1			5.90	0.45	34.93	167		
	1		9.56	271.0	3.52	0.27	20.87	100		
Beets,				1	0.016	0.001	0.097	0.46		
fresh,			1		0.45	0.03	2.75	13.1		
E. P.		1			7.26	0.45	44.00	209		
	1		7.66	217.1	3.47	0.22	21.10	100		

TABLE XV.

FOOD VALUES OF FOOD MATERIALS REQUIRING STUDY OF WEIGHTS AND MEASURES, AND OF COMPARATIVE COST ON THE BASIS OF FUEL VALUE.—*Continued.*

Food Material	P.	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars	Approximate Measure
		lb.	oz.	gms.						
Black-				1	0.013	0.010	0.109	0.58		
berries,			1		0.37	0.28	3.09	16.4		
fresh,		1			5.89	4.54	49.44	262		
A. P.	1		6.10	173.0	2.25	1.73	18.85	100		
Bread,				1	0.093	0.012	0.527	2.59		
white,			1		2.63	0.34	14.94	73.4		
miscel-		1			42.18	5.44	239.05	1174		
laneous.	1		1.38	39.0	3.60	0.46	20.39	100		
Butter.				1	0.010	0.850		7.69		
			1		0.28	24.09		217.9		
		1			4.54	385.56		3488		
	1		0.46	13.0	0.13	11.05		100		
Cabbage,				1	0.014	0.002	0.048	0.27		
A. P.			1		0.40	0.06	1.36	7.5		
		1			6.35	0.91	21.77	120.6		
	1		13.26	376.0	5.26	0.75	18.05	100		
Cabbage,				1	0.016	0.003	0.056	0.32		
E. P.			1		0.45	0.09	1.59	8.9		
		1			7.25	1.36	25.40	143		
	1		11.20	317.5	5.08	0.95	17.78	100		

TABLE XV.

FOOD VALUES OF FOOD MATERIALS REQUIRING STUDY OF WEIGHTS AND MEASURES, AND OF COMPARATIVE COST ON THE BASIS OF FUEL VALUE.—*Continued.*

Food Material	A. P. or E. P.	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars	Approximate Measure
		lb.	oz.	gms.						
Carrots,				1	0.009	0.002	0.074	0.35		
A. P.			1		0.25	0.06	2.10	9.9		
		1			4.08	0.91	33.56	159		
	1		10.08	285.7	2.57	0.57	21.14	100		
Carrots,				1	0.011	0.004	0.093	0.45		
E. P.			1		0.31	0.11	2.64	12.8		
		1			4.99	1.81	42.18	205		
	1		7.80	221.2	2.43	0.88	20.55	100		
Cauli-				1	0.018	0.005	0.047	0.31		
flower,			1		0.51	0.14	1.33	8.7		
A. P.		1			8.16	2.27	21.32	138		
	1		11.57	327.9	5.91	1.64	15.41	100		
Celery,				1	0.009	0.001	0.026	0.15		
A. P.			1		0.26	0.03	0.74	4.2		
		1			4.08	0.45	11.79	68		
	1		23.67	671.1	6.04	0.67	17.45	100		
Celery,				1	0.011	0.001	0.033	0.19		
E. P.			1		0.31	0.03	0.93	5.2		
		1			4.98	0.45	14.97	84		
	1		19.07	540.6	5.94	0.54	17.84	100		

TABLE XV.

FOOD VALUES OF FOOD MATERIALS REQUIRING STUDY OF WEIGHTS AND MEASURES, AND OF COMPARATIVE COST ON THE BASIS OF FUEL VALUE.—*Continued.*

Food Material	S. P.	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars	Approximate Measure
		lb.	oz.	gms.						
Cheese,				1	0.288	0.359	0.003	4.40		
American pale,			1		8.16	10.18	0.09	124.6		
A. P.		1			130.64	162.84	1.35	1994		
	1		0.80	22.8	6.50	8.17	0.07	100		
Cheese,				1	0.187	0.274	0.015	3.27		
Neuchatel,			1		5.30	7.78	0.42	92.8		
A. P.		1			84.82	124.30	6.80	1485		
	1		1.08	30.5	5.71	8.47	0.46	100		
Cherries,				1	0.009	0.008	0.159	0.74		
fresh,			1		0.25	0.23	4.51	21.1		
A. P.		1			4.08	3.63	72.12	338		
	1		4.74	134.4	1.21	1.08	21.37	100		
Cherries,				1	0.01	0.008	0.167	0.78		
fresh,			1		0.28	0.23	4.73	22.1		
E. P.		1			4.54	3.63	75.75	354		
	1		4.52	128.2	1.28	1.03	21.41	100		
Chocolate.				1	0.129	0.487	0.303	6.11		
			1		3.65	13.80	8.59	173.3		
		1			58.51	220.90	137.40	2772		
	1		0.58	16.4	2.11	7.97	4.95	100		

TABLE XV.

FOOD VALUES OF FOOD MATERIALS REQUIRING STUDY OF WEIGHTS AND MEASURES, AND OF COMPARATIVE COST ON THE BASIS OF FUEL VALUE.—*Continued.*

Food Material	S. P.	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars	Approximate Measure
		lb.	oz.	gms.						
Cocoa.				1	0.216	0.289	0.377	4.97		
			1		6.12	8.19	10.69	141.0		
		1			97.98	131.10	171.00	2256		
	1		0.71	20.1	4.34	5.81	7.58	100		
Cod, salt,				1	0.277	0.003		1.14		
boneless,			1		7.85	0.09		32.2		
A. P.		1			125.65	1.36		515		
	1		3.10	88.0	24.40	0.26		100		
Corn,				1	0.028	0.012	0.190	0.98		
canned.			1		0.79	0.34	5.39	27.8		
		1			12.70	5.44	86.19	445		
	1		3.60	102.0	2.86	1.23	19.39	100		
Corn,				1	0.012	0.004	0.077	0.39		
green,			1		0.34	0.11	2.18	11.1		
A. P.		1			5.44	1.81	34.93	178		
	1		9.00	255.1	3.06	1.02	19.64	100		
Corn,				1	0.031	0.011	0.197	1.01		
green,			1		0.88	0.31	5.58	28.7		
E. P.		1			14.06	4.98	89.36	459		
	1		3.49	99.0	3.06	1.09	19.49	100		

TABLE XV.

FOOD VALUES OF FOOD MATERIALS REQUIRING STUDY OF WEIGHTS AND MEASURES, AND OF COMPARATIVE COST ON THE BASIS OF FUEL VALUE.—*Continued.*

Food Material	S. P.	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars	Approximate Measure
		lb.	oz.	gms.						
Corn-				1	0.092	0.019	0.754	3.56		
meal,			1		2.61	0.54	21.38	100.8		
granular.		1			41.73	8.62	342.01	1613		
	1		0.99	28.1	2.59	0.53	21.20	100		
Corn-				1	0.055	0.015	0.810	3.60		
flakes,			1		1.56	0.43	23.00	102.1		
toasted.*		1			24.95	6.80	367.40	1631		
	1		0.99	27.8	1.53	0.42	22.53	100		
Corn-				1			0.900	3.60		
starch.			1				25.52	102.0		
		1					408.24	1632		
	1		0.99	27.8			25.0	100		
Crackers,				1	0.100	0.094	0.738	4.20		
graham.			1		2.84	2.66	20.92	119.0		
		1			45.36	42.64	334.76	1904		
	1		0.84	23.8	2.38	2.24	17.58	100		
Crackers,				1	0.113	0.105	0.705	4.22		
oyster.			1		3.20	2.98	19.98	119.6		
		1			51.26	47.63	320.10	1914		
	1		0.84	23.7	2.68	2.49	16.72	100		

* Ont. Dept. of Agr., Bull. 162.

TABLE XV.

FOOD VALUES OF FOOD MATERIALS REQUIRING STUDY OF WEIGHTS AND MEASURES, AND OF COMPARATIVE COST ON THE BASIS OF FUEL VALUE.—*Continued.*

Food Material	S. P.	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars	Approximate Measure
		lb.	oz.	gms.						
Crackers,				1	0.098	0.091	0.731	4.14		
soda.			1		2.78	2.58	20.74	117.2		
		1			44.45	41.27	331.64	1875		
	1		0.85	24.2	2.37	2.20	17.68	100		
Cranberries,				1	0.004	0.006	0.099	0.47		
A. P.			1		0.11	0.17	2.81	13.2		
		1			1.81	2.72	44.91	211		
	1		7.57	214.6	0.86	1.29	21.25	100		
Cream,				1	0.022	0.400	0.030	3.81		
thick,			1		0.62	11.34	0.85	107.9		
(40 %).		1			9.98	181.44	13.67	1727		
	1		0.93	26.3	0.58	10.47	0.78	100		
Cucumbers,				1	0.007	0.002	0.026	0.15		
A. P.			1		0.20	0.06	0.74	4.3		
		1			3.17	0.91	11.79	68		
	1		23.53	666.7	4.67	1.33	17.33	100		
Cucumbers,				1	0.008	0.002	0.031	0.17		
E. P.			1		0.23	0.06	0.88	4.9		
		1			3.63	0.91	14.06	79.0		
	1		20.28	574.8	4.60	1.15	17.82	100		

TABLE XV.

FOOD VALUES OF FOOD MATERIALS REQUIRING STUDY OF WEIGHTS AND MEASURES, AND OF COMPARATIVE COST ON THE BASIS OF FUEL VALUE.—*Continued.*

Food Material	S. P.	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars	Approximate Measure
		lb.	oz.	gms.						
Currants,				1	0.024	0.017	0.742	3.22		
dried,			1		0.68	0.48	21.04	91.2		
(Zante),		1			10.89	7.71	336.58	1459		
A. P.	1		1.10	31.1	0.75	0.53	23.07	100		
Currants,				1	0.015		0.128	0.57		
fresh,			1		0.48		3.62	16.2		
A. P.		1			6.80		58.04	259		
	1		6.17	174.8	2.62		22.38	100		
Dates,				1	0.019	0.025	0.706	3.13		
dried,			1		0.54	0.71	20.01	88.6		
A. P.		1			8.62	11.34	320.20	1416		
	1		1.13	32.0	0.60	0.80	22.59	100		
Dates,				1	0.021	0.028	0.784	3.47		
dried,			1		0.60	0.79	22.23	98.4		
E. P.		1			9.53	12.70	355.60	1575		
	1		1.02	28.8	0.61	0.81	22.58	100		
Eggs,				1	0.119	0.093		1.31		
whole,			1		3.37	2.63		37.2		
A. P.		1			53.98	42.18		595		
	1		2.69	76.2	9.06	7.08		100		

TABLE XV.

FOOD VALUES OF FOOD MATERIALS REQUIRING STUDY OF WEIGHTS AND MEASURES, AND OF COMPARATIVE COST ON THE BASIS OF FUEL VALUE.—*Continued.*

Food Material	S. P.	Weight lb.	Weight oz.	Weight gms.	Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars	Approximate Measure
Eggs,				1	0.134	0.105		1.48		
whole,			1		3.79	2.98		42.0		
E. P.		1			60.78	47.63		672		
	1		2.38	67.5	9.05	7.09		100		
Egg,				1	0.123	0.002		0.51		
white,			1		3.48	0.06		14.4		
E. P.		1			55.79	0.91		231		
	1		6.92	196.1	24.12	0.39		100		
Egg, yolk,				1	0.157	0.333		3.63		
E. P.			1		4.45	9.44		102.7		
		1			71.22	151.05		1643		
	1		0.97	27.6	4.33	9.18		100		
Farina.				1	0.110	0.014	0.763	3.62		
			1		3.12	0.39	21.64	102.6		
		1			49.89	6.35	346.10	1641		
	1		0.97	27.6	3.04	0.39	21.09	100		
Figs, dried.				1	0.043	0.003	0.742	3.17		
			1		1.21	0.09	21.00	89.8		
		1			19.50	1.36	336.50	1437		
	1		1.12	31.6	1.36	0.09	23.44	100		

TABLE XV.

FOOD VALUES OF FOOD MATERIALS REQUIRING STUDY OF WEIGHTS AND MEASURES, AND OF COMPARATIVE COST ON THE BASIS OF FUEL VALUE.—*Continued.*

Material Food	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars	Approximate Measure
	lb.	oz.	gms.						
Force.*			1	0.100	0.015	0.750	3.54		
		1		2.86	0.43	21.27	100.4		
	1			45.76	6.85	340.30	1605		
		1.0	28.3	2.82	0.42	21.19	100		
Gelatin.			1	0.914	0.001		3.67		
		1		25.91	0.03		103.9		
	1			414.59	0.45		1662		
		0.96	27.3	24.95	0.03		100		
Graham			1	0.133	0.022	0.714	3.59		
flour.		1		3.77	0.63	20.24	101.7		
	1			60.32	9.98	323.87	1627		
		0.98	27.9	3.71	0.61	19.92	100		
Grapes,			1	0.010	0.012	0.144	0.72		
fresh,		1		0.28	0.34	4.08	20.5		
A. P.	1			4.54	5.44	65.32	328		
		4.87	138.1	1.38	1.66	19.89	100		
Grapes,			1	0.013	0.016	0.192	0.96		
fresh,		1		0.37	0.45	5.44	27.3		
E. P.	1			5.90	7.26	87.09	437		
		3.66	103.7	1.36	1.66	19.92	100		

* Ont. Dept. of Agr., Bull. 162.

TABLE XV.

FOOD VALUES OF FOOD MATERIALS REQUIRING STUDY OF WEIGHTS AND MEASURES, AND OF COMPARATIVE COST ON THE BASIS OF FUEL VALUE.—*Continued.*

Food Material	S. P.	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars	Approximate Measure
		lb.	oz.	gms.						
Grape-				1	0.115	0.010	0.790	3.71		
nuts.*			1		3.26	0.28	22.39	105.2		
		1			52.16	4.54	358.34	1683		
	1		0.95	27.0	3.11	0.27	21.33	100		
Ham,				1	0.202	0.224		2.82		
smoked,			1		5.73	6.35		80.1		
boiled,		1			91.62	101.61		1281		
A. P.	1		1.25	35.4	7.15	7.93		100		
Hominy.				1	0.083	0.006	0.790	3.55		
			1		2.36	0.17	22.39	100.5		
		1			37.65	2.72	358.34	1608		
	1		1.0	28.3	2.35	0.17	22.32	100		
Lady				1	0.088	0.050	0.706	3.63		
fingers,			1		2.49	1.41	20.01	102.7		
A. P.		1			39.84	22.56	320.20	1643		
	1		0.97	27.6	2.43	1.40	19.47	100		
Lamb				1	0.184	0.267		3.14		
chops,			1		5.22	7.57		89.0		
broiled,		1			83.46	121.10		1425		
A. P.	1		1.13	31.9	5.86	8.51		100		

* Ont. Dept. of Agr., Bull. 162.

TABLE XV.

FOOD VALUES OF FOOD MATERIALS REQUIRING STUDY OF WEIGHTS AND MEASURES, AND OF COMPARATIVE COST ON THE BASIS OF FUEL VALUE.—*Continued.*

Food Material	P. or S.	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars	Approximate Measure
		lb.	oz.	gms.						
Lamb				1	0.217	0.299		3.56		
chops,			1		6.15	8.48		100.9		
broiled,		1			98.43	135.63		1615		
E. P.	1		0.99	28.1	6.10	8.40		100		
Lard,				1		1.000		9.00		
A. P.			1			28.35		255.2		
		1				453.60		4082		
	1		0.39	11.1		11.11		100		
Lemon				1			0.098	0.39		
juice.			1				2.77	11.1		
		1					44.45	178		
	1		9.0	255.1			25.00	100		
Lentils,				1	0.257	0.010	0.592	3.49		
dried,			1		7.29	0.28	16.78	98.8		
A. P.		1			116.57	4.54	268.52	1581		
	1		1.01	28.7	7.37	0.29	16.98	100		
Lettuce,				1	0.010	0.002	0.025	0.16		
A. P.			1		0.28	0.06	0.70	4.5		
		1			4.54	0.91	11.30	72		
	1		22.32	632.9	6.33	1.27	15.82	100		

TABLE XV.

FOOD VALUES OF FOOD MATERIALS REQUIRING STUDY OF WEIGHTS AND MEASURES, AND OF COMPARATIVE COST ON THE BASIS OF FUEL VALUE.—*Continued.*

Food Material	S. P.	Weight lb.	Weight oz.	Weight gms.	Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars	Approximate Measure
Lettuce,				1	0.012	0.003	0.029	0.19		
E. P.			1		0.34	0.09	0.82	5.4		
		1			5.44	1.36	13.15	87		
	1		18.47	523.6	6.28	1.57	15.18	100		
Macaroni.				1	0.134	0.009	0.741	3.58		
			1		3.80	0.25	21.00	101.5		
		1			60.78	4.08	336.12	1624		
	1		0.99	28.0	3.70	0.25	20.70	100		
Milk, condensed,				1	0.088	0.083	0.541	3.26		
sweetened.			1		2.49	2.35	15.34	92.5		
		1			39.95	37.65	245.40	1480		
	1		1.08	30.6	2.70	2.54	16.58	100		
Milk, condensed,				1	0.096	0.093	0.112	1.67		
unsweetened.			1		2.72	2.63	3.17	47.3		
		1			43.55	42.18	50.85	757		
	1		2.11	59.9	5.75	5.57	6.71	100		
Milk, skimmed.				1	0.034	0.003	0.051	0.37		
			1		0.96	0.09	1.45	10.4		
		1			15.40	1.36	23.10	166		
	1		9.61	272.5	9.26	0.82	13.90	100		

TABLE XV.

FOOD VALUES OF FOOD MATERIALS REQUIRING STUDY OF WEIGHTS AND MEASURES, AND OF COMPARATIVE COST ON THE BASIS OF FUEL VALUE.—*Continued.*

Food Material	S. P.	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars	Approximate Measure
		lb.	oz	gms.						
Milk,				1	0.033	0.040	0.050	0.69		
whole.			1		0.94	1.13	1.41	19.6		
		1			14.96	18.14	22.68	314		
	1		5.10	144.5	4.76	5.78	7.22	100		
Molasses,				1	0.024		0.693	2.87		
cane,			1		0.68		19.65	81.3		
		1			10.88		314.40	1301		
	1		1.23	34.9	0.84		24.16	100		
Musk-				1	0.003		0.046	0.20		
melons,			1		0.09		1.30	5.6		
A. P.		1			1.36		20.86	88.9		
	1		18.00	510.2	1.53		23.47	100		
Musk-				1	0.006		0.093	0.40		
melons,			1		0.17		2.64	11.2		
E. P.		1			2.72		42.18	180		
	1		8.91	252.5	1.52		23.48	100		
Oats,				1	0.167	0.073	0.662	3.97		
rolled.			1		4.73	2.07	18.77	112.6		
		1			75.75	33.12	300.40	1803		
	1		0.89	25.2	4.20	1.83	16.67	100		

TABLE XV.

FOOD VALUES OF FOOD MATERIALS REQUIRING STUDY OF WEIGHTS AND MEASURES, AND OF COMPARATIVE COST ON THE BASIS OF FUEL VALUE.—*Continued.*

Food Material	P. S.	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars	Approximate Measure
		lb.	oz.	gms.						
Olives,				1	0.008	0.202	0.085	2.19		
green,			1		0.23	5.72	2.41	62.1		
A. P.		1			3.63	91.60	38.55	993		
	1		1.61	45.7	0.36	9.22	3.88	100		
Olives,				1	0.011	0.276	0.116	2.99		
green,			1		0.31	7.82	3.29	84.8		
E. P.		1			4.99	125.18	52.61	1357		
	1		1.18	33.4	0.37	9.23	3.88	100		
Olive oil.				1		1.000		9.00		
			1			28.35		255.1		
		1				453.60		4082		
	1		0.39	11.1		11.11		100		
Onions,				1	0.014	0.003	0.089	0.44		
fresh,			1		0.40	0.09	2.52	12.4		
A. P.		1			6.35	1.36	40.37	199		
	1		8.03	227.6	3.19	0.68	20.27	100		
Onions,				1	0.016	0.003	0.099	0.49		
fresh,			1		0.45	0.09	2.80	13.8		
E. P.		1			7.26	1.36	44.80	220		
	1		7.24	205.4	3.30	0.62	20.33	100		

TABLE XV.

FOOD VALUES OF FOOD MATERIALS REQUIRING STUDY OF WEIGHTS AND MEASURES, AND OF COMPARATIVE COST ON THE BASIS OF FUEL VALUE.—*Continued.*

Food Material	S. P.	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars	Approximate Measure
		lb.	oz.	gms.						
Oranges,				1	0.006	0.001	0.085	0.37		
fresh,			1		0.17	0.03	2.41	10.6		
A. P.		1			2.72	0.45	38.56	169		
	1		9.45	268.1	1.61	0.27	22.79	100		
Oranges,				1	0.008	0.002	0.116	0.51		
fresh,			1		0.23	0.06	3.29	14.6		
E. P.		1			3.63	0.91	52.61	233		
	1		6.86	194.6	1.56	0.39	22.57	100		
Oysters,				1	0.060	0.013	0.033	0.49		
solids,			1		1.70	0.37	0.94	13.9		
A. P.		1			27.22	5.90	14.97	222		
	1		7.21	204.5	12.27	2.66	6.75	100		
Oysters, in				1	0.062	0.012	0.037	0.50		
shell,			1		1.75	0.34	1.05	14.3		
E. P.		1			28.14	5.44	16.30	229		
	1		7.00	198.4	12.30	2.38	7.34	100		
Parsnips,				1	0.013	0.004	0.108	0.52		
A. P.			1		0.37	0.11	3.06	14.7		
		1			5.90	1.81	48.96	236		
	1		6.78	192.3	2.50	0.77	20.77	100		

TABLE XV.

FOOD VALUES OF FOOD MATERIALS REQUIRING STUDY OF WEIGHTS AND MEASURES, AND OF COMPARATIVE COST ON THE BASIS OF FUEL VALUE.—*Continued.*

Food Material	E. P.	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars	Approximate Measure
		lb.	oz.	gms.						
Parsnips,				1	0.016	0.005	0.135	0.65		
E. P.			1		0.45	0.14	3.83	18.4		
		1			7.30	2.27	61.24	294		
	1		5.43	154.1	2.47	0.77	20.80	100		
Peaches,				1	0.007	0.001	0.108	0.47		
canned,			1		0.20	0.03	3.06	13.3		
A. P.		1			3.17	0.45	48.99	213		
	1		7.50	213.2	1.49	0.21	23.03	100		
Peaches,				1	0.005	0.001	0.077	0.34		
fresh,			1		0.14	0.03	2.18	9.6		
A. P.		1			2.27	0.45	34.92	153		
	1		10.47	296.7	1.48	0.30	22.85	100		
Peaches,				1	0.007	0.001	0.094	0.41		
fresh,			1		0.20	0.03	2.67	11.7		
E. P.		1			3.17	0.45	42.64	187		
	1		8.53	242.1	1.70	0.24	22.76	100		
Peanuts,				1	0.195	0.291	0.185	4.14		
A. P.			1		5.52	8.25	5.24	117.3		
		1			88.36	131.87	83.82	1877		
	1		0.85	24.2	4.71	7.03	4.47	100		

TABLE XV.

FOOD VALUES OF FOOD MATERIALS REQUIRING STUDY OF WEIGHTS AND MEASURES, AND OF COMPARATIVE COST ON THE BASIS OF FUEL VALUE.—*Continued.*

Food Material	S. P.	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars	Approximate Measure
		lb.	oz.	gms.						
Peanuts,				1	0.258	0.386	0.244	5.48		
E. P.			1		7.31	10.94	6.91	155.4		
		1			117.03	175.09	110.70	2487		
	1		0.64	18.2	4.69	7.03	4.44	100		
Peanut				1	0.293	0.465	0.171	6.04		
butter.			1		8.31	13.20	4.85	171.3		
		1			132.90	210.90	77.56	2741		
	1		0.58	16.5	4.85	7.70	2.83	100		
Pears,				1	0.003	0.003	0.180	0.76		
canned,			1		0.09	0.09	5.10	21.5		
A. P.		1			1.36	1.36	81.64	344		
	1		4.65	131.7	0.39	0.39	23.72	100		
Pears,				1	0.005	0.004	0.127	0.56		
fresh,			1		0.14	0.11	3.60	16.0		
A. P.		1			2.27	1.81	57.61	256		
	1		6.25	177.3	0.86	0.71	22.52	100		
Pears,				1	0.006	0.005	0.141	0.63		
fresh,			1		0.17	0.14	4.00	17.9		
E. P.		1			2.72	2.27	63.96	287		
	1		5.57	158.0	0.95	0.79	22.28	100		

TABLE XV.

FOOD VALUES OF FOOD MATERIALS REQUIRING STUDY OF WEIGHTS AND MEASURES, AND OF COMPARATIVE COST ON THE BASIS OF FUEL VALUE.—*Continued.*

Food Material	No.	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars	Approximate Measure
		lb.	oz.	gms.						
Peas,				1	0.036	0.002	0.098	0.55		
canned.			1		1.02	0.06	2.78	15.7		
		1			16.32	0.91	44.45	251		
	1		6.37	180.5	6.52	0.36	17.73	100		
Peas,				1	0.246	0.010	0.620	3.55		
dried,			1		6.97	0.28	17.57	100.7		
split,		1			111.6	4.54	281.40	1612		
A. P.	1		0.99	28.1	6.92	0.28	17.40	100		
Peas,				1	0.036	0.002	0.098	0.55		
green,			1		1.02	0.06	2.78	15.7		
A. P.		1			16.33	0.91	44.45	251		
	1		6.37	180.5	6.50	0.36	17.69	100		
Peas,				1	0.070	0.005	0.169	1.00		
green,			1		1.98	0.14	4.79	28.3		
E. P.		1			31.70	2.27	76.66	454		
	1		3.52	99.9	6.99	0.50	16.88	100		
Pineapple,				1	0.004	0.007	0.364	1.53		
canned,			1		0.11	0.20	10.32	43.5		
A. P.		1			1.81	3.18	165.10	696		
	1		2.30	65.1	0.26	0.45	23.71	100		

TABLE XV.

FOOD VALUES OF FOOD MATERIALS REQUIRING STUDY OF WEIGHTS AND MEASURES, AND OF COMPARATIVE COST ON THE BASIS OF FUEL VALUE.—*Continued.*

Food Material	Purchase Unit	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars	Approximate Measure
		lb.	oz.	gms.						
Pineapple,				1	0.004	0.003	0.097	0.43		
fresh,			1		0.11	0.09	2.75	12.2		
E. P.		1			1.81	1.36	44.04	196		
	1		8.18	232.0	0.93	0.70	22.5	100		
Plums,				1	0.009		0.191	0.80		
fresh,			1		0.25		5.42	22.7		
A. P.		1			4.08		86.64	363		
	1		4.41	125.0	1.13		23.87	100		
Plums,				1	0.010		0.201	0.84		
fresh,			1		0.28		5.70	23.9		
E. P.		1			4.54		91.16	383		
	1		4.18	118.5	1.19		23.81	100		
Potatoes,				1	0.018	0.001	0.147	0.67		
raw,			1		0.51	0.03	4.17	19.0		
A. P.		1			8.16	0.45	66.68	304		
	1		5.27	149.5	2.69	0.15	21.97	100		
Potatoes,				1	0.022	0.001	0.184	0.83		
raw,			1		0.62	0.03	5.22	23.6		
E. P.		1			9.93	0.45	83.46	378		
	1		4.23	120.0	2.64	0.12	22.09	100		

TABLE XV.

FOOD VALUES OF FOOD MATERIALS REQUIRING STUDY OF WEIGHTS AND MEASURES, AND OF COMPARATIVE COST ON THE BASIS OF FUEL VALUE.—*Continued.*

Food Material	Si. P.	Weight lb.	Weight oz.	Weight gms.	Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars	Approximate Measure
Potatoes,				1	0.068	0.398	0.467	5.72		
cooked,			1		1.93	11.28	13.25	162.2		
chips,		1			30.85	180.50	211.80	2596		
A. P.	1		0.62	17.5	1.19	6.96	8.16	100		
Potatoes,				1	0.014	0.006	0.219	0.99		
sweet,			1		0.39	0.17	6.21	27.9		
A. P.		1			6.35	2.72	99.24	447		
	1		3.58	101.4	1.42	0.60	22.20	100		
Potatoes,				1	0.018	0.007	0.274	1.23		
sweet,			1		0.51	0.20	7.77	34.9		
E. P.		1			8.16	3.18	124.29	558		
	1		2.86	81.2	1.46	0.57	22.26	100		
Prunes,				1	0.018		0.622	2.56		
A. P.			1		0.51		17.63	72.6		
		1			8.16		282.10	1161		
	1		1.37	39.1	0.70		24.30	100		
Prunes,				1	0.021		0.733	3.02		
E. P.			1		0.60		20.78	85.5		
		1			9.53		332.48	1368		
	1		1.17	33.2	0.70		24.30	100		

TABLE XV.

FOOD VALUES OF FOOD MATERIALS REQUIRING STUDY OF WEIGHTS AND MEASURES, AND OF COMPARATIVE COST ON THE BASIS OF FUEL VALUE.—*Continued.*

Food Material	S. P.	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars	Approximate Measure
		lb.	oz.	gms.						
Radishes,				1	0.000	0.001	0.040	0.21		
A. P.			1		0.26	0.03	1.13	5.8		
		1			4.08	0.45	18.14	93		
	1		17.21	487.8	4.39	0.49	19.51	100		
Radishes,				1	0.013	0.001	0.058	0.29		
E. P.			1		0.37	0.03	1.64	8.3		
		1			5.90	0.45	26.31	133		
	1		12.04	341.3	4.43	0.34	19.79	100		
Raisins,				1	0.023	0.030	0.685	3.10		
A. P.			1		0.65	0.85	19.42	87.9		
		1			10.43	13.61	310.70	1407		
	1		1.14	32.2	0.74	0.97	22.08	100		
Raisins,				1	0.026	0.033	0.761	3.45		
E. P.			1		0.74	0.94	21.57	97.7		
		1			11.79	14.97	345.19	1563		
	1		1.02	29.0	0.76	0.96	22.09	100		
Raspberries, black, fresh,				1	0.017	0.010	0.126	0.66		
			1		0.48	0.28	3.57	18.8		
		1			7.71	4.54	57.16	300		
E. P.	1		5.33	151.1	2.57	1.51	19.08	100		

TABLE XV.

FOOD VALUES OF FOOD MATERIALS REQUIRING STUDY OF WEIGHTS AND MEASURES, AND OF COMPARATIVE COST ON THE BASIS OF FUEL VALUE.—*Continued.*

Food Material	No.	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars	Approximate Measure
		lb.	oz.	gms.						
Rhubarb,				1	0.004	0.004	0.022	0.14		
fresh,			1		0.11	0.11	0.62	3.9		
A. P.		1			1.81	1.81	9.98	62		
	1		25.20	714.2	2.86	2.86	15.71	100		
Rhubarb,				1	0.006	0.007	0.036	0.23		
fresh,			1		0.17	0.20	1.02	6.6		
E. P.		1			2.72	3.17	16.33	105		
	1		15.27	433.0	2.60	3.03	15.58	100		
Rice.				1	0.08	0.003	0.790	3.51		
			1		2.26	0.09	22.39	99.4		
		1			36.32	1.36	358.34	1591		
	1		1.01	28.5	2.28	0.09	22.52	100		
Salmon,				1	0.195	0.075		1.45		
canned,			1		5.53	2.13		41.2		
A. P.		1			88.45	34.02		660		
	1		2.41	68.7	13.40	5.15		100		
Salmon,				1	0.218	0.121		1.96		
canned,			1		6.18	3.43		55.6		
E. P.		1			98.87	54.88		889		
	1		1.80	51.0	11.12	6.17		100		

TABLE XV.

FOOD VALUES OF FOOD MATERIALS REQUIRING STUDY OF WEIGHTS AND MEASURES, AND OF COMPARATIVE COST ON THE BASIS OF FUEL VALUE.—*Continued.*

Food Material	e. p.	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars	Approximate Measure
		lb.	oz.	gms.						
Saltines.				1	0.106	0.127	0.685	4.31		
			1		3.00	3.60	19.42	122.1		
		1			48.08	57.60	310.70	1954		
	1		0.82	23.2	2.46	2.95	15.90	100		
Sardines,				1	0.237	0.121		2.04		
canned,			1		6.72	3.43		57.7		
A. P.		1			107.50	54.89		924		
	1		1.73	49.1	11.64	5.94		100		
Sardines,				1	0.230	0.197		2.69		
canned,			1		6.52	5.58		76.3		
E. P.		1			104.32	89.28		1221		
	1		1.31	37.1	8.54	7.32		100		
Spinach,				1	0.021	0.003	0.032	0.24		
fresh,			1		0.59	0.09	0.91	6.8		
E. P.		1			9.52	1.36	14.50	108		
	1		14.76	418.4	8.79	1.25	13.39	100		
Squash,				1	0.007	0.002	0.045	0.23		
fresh,			1		0.20	0.06	1.28	6.4		
A. P.		1			3.17	0.91	20.41	103		
	1		15.62	443	3.10	0.88	19.91	100		

TABLE XV.

FOOD VALUES OF FOOD MATERIALS REQUIRING STUDY OF WEIGHTS AND MEASURES, AND OF COMPARATIVE COST ON THE BASIS OF FUEL VALUE.—*Continued.*

Food Material	S. P.	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars	Approximate Measure
		lb.	oz.	gms.						
Straw-				1	0.009	0.006	0.070	0.37		
berries,			1		0.26	0.17	1.98	10.5		
fresh,		1			4.08	2.72	31.75	168		
A. P.	1		9.53	270.3	2.43	1.62	18.90	100		
Straw-				1	0.010	0.006	0.074	0.39		
berries,			1		0.28	0.17	2.10	11.1		
fresh,		1			4.54	2.72	33.57	177		
E. P.	1		9.04	256.4	2.56	1.54	18.97	100		
Sugar,				1			1.00	4.00		
granu-			1				28.35	113.4		
lated.		1					453.60	1814		
	1		0.88	25.0			25.00	100		
Tapioca.				1	0.004	0.001	0.880	3.55		
			1		0.11	0.03	24.95	100.5		
		1			1.81	0.45	399.20	1608		
	1		0.99	28.2	0.11	0.03	24.83	100		
Tomatoes,				1	0.012	0.002	0.04	0.23		
canned.			1		0.34	0.06	1.13	6.4		
		1			5.44	0.91	18.10	103		
	1		15.63	442.5	5.31	0.88	17.70	100		

TABLE XV.

FOOD VALUES OF FOOD MATERIALS REQUIRING STUDY OF WEIGHTS AND MEASURES, AND OF COMPARATIVE COST ON THE BASIS OF FUEL VALUE.—*Continued.*

Food Material	S. P.	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars	Approximate Measure
		lb.	oz.	gms.						
Tomatoes,				1	0.009	0.004	0.039	0.23		
fresh,			1		0.26	0.11	1.10	6.5		
A. P.		1			4.08	1.81	17.69	103		
	1		15.47	438.6	3.95	1.75	17.11	100		
Turnips,				1	0.009	0.001	0.057	0.27		
fresh,			1		0.26	0.03	1.62	7.7		
A. P.		1			4.08	0.45	25.85	124		
	1		12.92	366.3	3.30	0.37	20.88	100		
Turnips,				1	0.013	0.002	0.081	0.39		
fresh,			1		0.37	0.06	2.30	11.2		
E. P.		1			5.89	0.91	36.74	179		
	1		8.95	253.8	3.30	0.51	20.56	100		
Walnuts,				1	0.049	0.173	0.035	1.89		
California,			1		1.39	4.94	0.99	53.6		
A. P.		1			22.21	78.40	15.87	859		
	1		1.86	52.8	2.59	9.14	1.85	100		
Walnuts,				1	0.184	0.644	0.130	7.03		
California,			1		5.22	18.26	3.69	200.0		
E. P.		1			83.46	292.10	58.97	3199		
	1		0.50	14.2	2.61	9.13	1.84	100		

TABLE XV.

FOOD VALUES OF FOOD MATERIALS REQUIRING STUDY OF WEIGHTS AND MEASURES, AND OF COMPARATIVE COST ON THE BASIS OF FUEL VALUE.—*Continued.*

Food Material	S. P.	Weight lb.	Weight oz.	Weight gms.	Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars	Approximate Measure
Wheat,				1	0.134	0.014	0.743	3.63		
flaked,			1		3.80	0.39	21.06	103.0		
		1			60.78	6.35	337.00	1648		
	1		0.97	27.5	3.70	0.38	20.50	100		
Wheat,				1	0.138	0.019	0.719	3.60		
flour,			1		3.91	0.53	20.38	102.0		
entire.		1			62.60	8.69	326.14	1633		
	1		0.98	27.8	3.84	0.53	19.98	100		
Wheat,				1	0.112	0.010	0.749	3.53		
flour, high			1		3.18	0.28	21.24	100.2		
grade, roll-		1			50.80	4.53	339.75	1603		
er process.	1		1.0	28.3	3.17	0.28	21.19	100		
Wheat,				1	0.121	0.018	0.752	3.65		
shredded.			1		3.43	0.51	21.31	103.6		
		1			54.88	8.16	341.10	1657		
	1		0.97	27.4	3.51	0.49	20.59	100		
Zwiebach.				1	0.098	0.099	0.735	4.22		
			1		2.77	2.80	20.83	119.6		
		1			44.45	44.90	333.40	1916		
	1		0.84	23.7	2.32	2.35	17.41	100		

PROBLEM II.

GIVEN THE PERCENTAGE COMPOSITION, TO FIND THE WEIGHT OF PROTEIN, FAT, AND CARBOHYDRATE RESPECTIVELY, IN ANY WEIGHT OF FOOD MATERIAL.

In studying food values, it is necessary to be able to translate percentage quickly into terms of weight and vice versa. This is simple if it be clearly understood at the outset that percentage means *parts per 100 parts*, without regard to whether these parts be taken by English or Metric system. Cows' milk has the following percentage composition:

Protein	Fat	Carbohydrate
3.3 per cent	4.0 per cent	5.0 per cent

If we take as the basis for calculation a unit of weight, as one pound, we shall find the following weight of protein, fat and carbohydrate yielded by this amount of milk:

Protein	Fat	Carbohydrate
0.033 pound	0.04 pound	0.05 pound

The scientific unit of weight is the gram, and the food-stuffs are commonly reported in terms of this unit. In one gram of milk there will be by weight, according to the above analysis:

Protein	Fat	Carbohydrate
0.033 gram	0.04 gram	0.05 gram

In other words, dividing the figures representing the percentage composition by 100 (*i. e.*, moving the decimal point two places toward the left) will give the weight in grams of protein, fat and carbohydrate in one *gram* of any food material.

The number of grams of protein, fat or carbohydrate in one *ounce* of any food material may be found most easily by multiplying the values for one gram by 28.35, the number of grams in one ounce. Thus one ounce of milk yields:

Protein	Fat	Carbohydrate
0.9355 gram	1.134 grams	1.4175 grams
(0.033 × 28.35)	(0.04 × 28.35)	(0.05 × 28.35)

The number of grams of protein, fat, or carbohydrate in one *pound* will be found by multiplying the values for one gram by

453.6, the number of grams in one pound. Thus one pound of milk yields:

Protein	Fat	Carbohydrate
14.9688 grams	18.144 grams	22.68 grams
(0.033 × 453.6)	(0.04 × 453.6)	(0.05 × 453.6)

In general, to find the weights of foodstuffs in any given amount of food material, find the weight of the material, express this in grams, and multiply the result by the food values for one gram. For example, to find the weight of each of the foodstuffs in quart of milk.

First, ascertain the weight—34.4 ounces.

Second, express this weight in grams—34.4 × 28.35 = 975.24 grams.

Third, multiply the weight in grams by the food values for one gram, as follows:

Protein	975.24 × 0.033	= 32.183 grams.
Fat	975.24 × 0.04	= 39.0096 grams.
Carbohydrates	975.24 × 0.05	= 48.762 grams.

In actual practice it is not necessary to retain all of these figures in the decimal fractions, which imply greater accuracy than is possible in estimating food values from average analyses of the food materials, as already stated in Problem I. The discrepancies which occur from dropping decimals are within the limits of accuracy in this method of determining food values.

PROBLEM III.

TO FIND THE FUEL VALUE OF ANY GIVEN WEIGHT OF FOOD MATERIAL.

Since fuel values are expressed in terms of *Calories per gram*, one gram of protein yielding 4 Calories, one gram of fat 9 Calories, and one gram of carbohydrate 4 Calories, it is necessary to find first the amount of each nutrient in the given weight of food material in grams, and then to multiply these results by the respective factors for fuel values, the sum of the products being the total fuel value. For example, one gram of milk yields 0.033 gram of protein, 0.04 gram of fat and 0.05 gram of carbohydrate (cf. Problem II). Then

0.033 × 4 = 0.132 Calories from protein
0.04 × 9 = 0.360 Calories from fat
0.05 × 4 = 0.200 Calories from carbohydrate
Total, 0.692 Calories, fuel value of one gram of milk.

Similarly, the total fuel value for one quart of milk is obtained as follows:

Weight of protein	= 32.18 grams;*	32.18 × 4 = 129.72 Calories
Weight of fat	= 39.01 grams;*	39.01 × 9 = 351.09 Calories
Weight of carbohydrate	= 48.76 grams;*	48.76 × 4 = 195.04 Calories
Total fuel value of one quart of milk		= 675.85 Calories

PROBLEM IV.

TO FIND THE WEIGHT OF A STANDARD OR 100-CALORIE PORTION OF ANY SINGLE FOOD MATERIAL.

In order to obtain an intelligent idea of the relative value of different kinds of food materials, it is necessary to establish some common unit on the basis of which they may be compared. With regard to fuel value, such a unit has been devised in the Standard Portion, which is the amount of any food capable of yielding in the body energy equivalent to 100 Calories. Every student of dietetics should be familiar with the Standard Portions of all common food materials, and of the dishes which most frequently appear upon the table.

To find the weight in grams of any Standard or 100-Calorie Portion:

Determine the fuel value for one gram.

Divide 100 by the fuel value per gram, or in other words, solve the following proportion:

1 gram : Calories in one gram : : x grams : 100 Calories.

Thus in the case of cows' milk, the fuel value per gram is 0.692 Calorie.†

Then $100 \div 0.692 = 144.5$ grams; or,

1 gram : 0.692 Calorie : : x : 100 Calories.

$0.692\,x = 100$

$x = 144.5$ grams, weight of One Standard Portion of Milk.

Inasmuch as foods are purchased by English measure, it is necessary in estimating cost to express the Standard Portion in

* Cf. Problem II.

† Cf. Problem III, and Table XV.

ounces (or sometimes in pounds). This can be done by dividing the number of grams by 28.35 (the number of grams in one ounce), but much time can be saved by using Table XXI for converting grams to ounces. By reference to this table, we find that 144.5 grams equal 5.1 ounces.

PROBLEM V.

TO FIND THE FOOD VALUES FOR ANY COMBINATION OF FOOD MATERIALS.

In ordinary dietetic practice, it is necessary to deal frequently with combinations of two or more food materials. Sugar is added to fruit, milk and butter to vegetables, and the products of cook book recipes are often quite complex mixtures. To ascertain the food values of such dishes it is necessary to proceed as follows:

First, determine the weight of each ingredient in grams.

Second, compute separately the protein, fat and carbohydrate in grams, and the fuel value for each food material.

The sum of these will give the food values for the whole dish, as the following illustration will show:

ONE EGG CAKE.*

¼ cup of butter	½ cup of milk
½ cup of sugar	1½ cups of flour
1 egg	2½ teaspoons of baking powder

* Boston Cooking-School Cook Book.

The butter weighs 57 grams; calculating the nutritive value according to Problems II and III (or referring to the food values of one gram in Table XV) we have the following results:

Protein, Grams	Fat, Grams	Carbohydrate, Grams	Calories
0.57	48.45	——	438.3

The other food materials are weighed and their food values calculated in similar fashion. The sum of the values for each food as tabulated below will give the value of the whole dish. The cost may be calculated for each ingredient and recorded at the same time.

FOOD VALUES OF A RECIPE.*

Material	Measure	Weight		Protein, Gm.	Fat, Gm.	Carb., Gm.	Calories.	Cost, Dollars
		Oz.	Gm.					
Butter	¼ c.†	2.0	57	0.57	48.45	——	438.3	0.0450
Sugar	½ c.	3.9	105	——	——	105.00	420.0	0.0137
Egg	1	2.0	57	6.78	5.30	——	74.8	0.0300
Milk (skimmed)	½ c.	4.3	122	4.15	0.36	6.22	44.7	0.0050
Flour	1½ c.	6.0	172	17.26	1.72	128.73	607.8	0.0132
Baking powder	2½ tsp.†	0.5	15	——	——	——	——	0.0156
Totals (uncooked)‡	3 c.	18.7	528	30.76	55.83	239.95	1585.6	0.1225

* For other dietary recipes see Food for The Worker, Stern and Spitz, Boston, 1917, and Feeding the Family, Rose, New York, 1916.

† c. denotes cup; tsp. denotes teaspoon.

‡ It is usually more satisfactory to take total weight and measure after the dish is cooked, so as to know the food value of a given amount of the finished product.

PROBLEM VI.

TO FIND THE DISTRIBUTION OF THE FOODSTUFFS IN A STANDARD PORTION OF A SINGLE FOOD MATERIAL.

While the standard portion is of most convenience in estimating the total energy value of a given dietary, it may also serve as a means of indicating the amount of protein, fat or carbohydrate furnished, if we calculate the weight of each foodstuff in the standard portion itself. Having determined the weight of each nutrient in one gram of the food material (according to Problem II), it is simply necessary to multiply these values by the weight of the standard portion in grams. Thus in the case of cows' milk,

	Protein, Gm.	Fat, Gm.	Carbohydrate, Gm.
Weight of each food-stuff in one gram	0.033	0.04	0.05
Weight of one Standard Portion	144.5 Gm.	——	——
Total weight of each foodstuff in one Standard Portion	4.7685	5.780	7.225

These results may be verified by multiplying the weight of protein, fat and carbohydrate by the factors for fuel values (cf. Problem III); the sum of the products will be 100 Calories.

Protein	4.7685	× 4 =	19.074 Calories.
Fat	5.780	× 9 =	52.020 Calories.
Carbohydrate	7.225	× 4 =	28.900 Calories.
Total			99.994 Calories.

It is often convenient to express the distribution of foodstuffs

in a standard portion entirely in terms of energy value. From the calculations above it is evident that a standard portion of milk will yield, in round numbers, the following:

Calories from Protein	Calories from Fat	Calories from Carbohydrate	Total Calories
19	52	29	100

PROBLEM VII.

TO FIND A STANDARD PORTION OF ANY COMBINATION OF FOOD MATERIALS.

Standard portions of single food materials which are fairly constant in composition, may be permanently tabulated for reference, but in the case of mixtures great variation in food value is possible, even in recipes containing only three or four different ingredients, and the comparison of Standard Portions of various dishes in which the food values are purposely modified (as by using skim milk for whole milk, half water and half milk instead of milk only) is most profitable. It is necessary, therefore, to be able to calculate the food values for a standard portion of any mixture of food material.

The first step is to determine the total food values for the recipe, as described in Problem IV.

Having ascertained the total fuel value, *the per cent of the whole required to give 100 Calories* is found by dividing 100 by the total number of Calories yielded by the recipe. Taking this per cent of the total weight, measure, food values, etc., of the recipe, will give the measure, weight and distribution of foodstuffs in the Standard Portion.

For example, take the recipe for One Egg Cake in Problem V. The totals are as follows:

Measure (Uncooked)	Weight (Uncooked), Ounces	Grams	Protein, Grams	Fat, Grams	Carbohydrate, Grams	Calories	Cost
3 c.	18.7	528	30.76	55.83	239.95	1585.6	$0.1225

Dividing 100 by 1585.6, gives 0.063, *i.e.*, 6.3 per cent of the whole is required to yield 100 Calories.

Multiplying the totals by 0.063, we have the value for one Standard Portion, as follows:

Measure (Uncooked)	Weight (Uncooked). Ounces	Protein, Grams	Fat, Grams	Grams	Carbohydrate, Grams	Calories	Cost
½ c.	1.18	1.93	1.94	3.52	15.12	100	$0.0077

The total weight of the finished product is not the same as the combined weights of the ingredients in most cases, on account of changes in water content, but if the same *proportion* of the total weight or measure of cooked material is always taken for the

Recipe: One Egg Cake. Date:.....

Material	Measure	Weight		Protein, Gm.	Fat, Gm.	Carb., Gm.	Calories	Cost Dollars
		Oz.	Gm.					
Butter	¼ c.	2.0	57	0.57	48.45	—	438.3	0.0450
Sugar	½ c.	3.9	105	—	—	105.00	420.0	0.0137
Egg	1	2.0	57	6.78	5.30	—	74.8	0.0300
Milk (skimmed)	½ c.	4.3	122	4.15	0.36	6.22	44.7	0.0050
Flour	1½ c.	6.0	172	19.26	1.72	128.73	607.8	0.0132
Baking powder	2½ tsp.	0.5	15	—	—	—	—	0.0156
Totals (uncooked)	3 c.	18.7	528	30.76	55.83	239.95	1585.6	0.1225
Standard Portion	Per cent of recipe							
	6.3	1.18	33	1.94	3.52	15.12	100	0.0077
1 Serving	12.5	2.34	66	3.84	6.98	29.99	198.2	0.0153

Computed by:.....

standard portion, no serious difficulties will be encountered. When a recipe is made, it is also well to consider the number of ordinary servings which it will make, and to calculate the food value for the individual portion. Such records are very useful in planning dietaries, saving time in calculation, especially if kept on uniform cards in a file. The foregoing shows a complete record on a convenient model.

PROBLEM VIII.

TO FIND THE PERCENTAGE COMPOSITION OF A FOOD MIXTURE.

While the feeding of infants is commonly conducted with little regard to the percentage method nowadays, to determine the percentage of each of the foodstuffs in any prescribed diet is still useful to throw light on the probable ease with which such a mixture will be digested.

Given, for instance, such a prescription as the following, what per cent of protein, fat, and carbohydrate does it contain?

Whole milk, 16 ounces (by volume).
Barley water, 16 ounces (containing 0.25 ounce of barley flour).
Milk sugar, 1 ounce.

It is first necessary to determine the total amount of each of the foodstuffs, as in Problem V. The results are as follows:

Food Material	Measure	Weight		Protein, Grams	Fat, Grams	Carbohydrate, Grams
		Ounces	Grams			
Milk	2 cups	17.2	487.60	16.09	19.50	24.38
Barley flour	½ tbsp.	0.25	7.08	0.74	0.16	5.10
Milk sugar	3 tbsp.	1.0	28.35	—	—	28.35
Water	2 cups	16.0	453.60	—	—	—
Totals		34.45	976.53	16.83	19.66	57.83

Having the total weight of the mixture, it is now a simple matter to determine what per cent of this is represented by each ingredient:

Protein: 16.83 ÷ 976.53 = 0.0172, or 1.72 per cent.
Fat: 19.66 ÷ 976.53 = 0.0201, or 2.01 per cent.
Carbohydrate: 57.83 ÷ 976.53 = 0.0592, or 5.92 per cent.

PROBLEM IX.

TO MAKE A COMPLETE DIETARY RECORD.

The dietary may be considered from two points of view: first, as a record of food actually consumed by a given number of persons in a given period; second, as a prescription of the food to be provided for certain individuals for a stated time. In either case, its value is increased by so arranging the report as to show not only the nutritive value of the diet, but also its cost and menu, thus presenting as clear a picture as possible of the food consumed, or a definite working plan for preparing the diet proposed. Since the data are frequently numerous, the work is much facilitated by suitable blanks, a convenient set consisting of six sheets, whose use is shown in the example of a complete dietary below.

Sheet Number I gives general information with regard to the subjects of the study; it shows their individual requirements and affords a means of comparing one study with another by reducing both to a uniform basis, either "per capita" or "per man" per day. The tables in the section on Food Requirements (Tables I–XIII) will be of assistance in determining food requirements of individuals of different ages, weights and muscular activity.

Sheet Number II is designed to give as accurately as possible a picture of how the food will appear upon the table. The amounts

should be stated for each dish in some way which will make the plan easy to follow in preparing the meals. Ordinarily, common measures (cups, tablespoons, etc.) will be most satisfactory, but in the laboratory it is frequently desirable that weights be stated, especially when several persons are engaged in preparing the day's ration, to avoid discrepancies due to inaccurate measurement. This careful statement of amounts serves also as a check against omitting in the computation of food values articles essential to the success of the menu.

Sheet Number III indicates the total quantities of each kind of material required for the dietary, summarized from sheets IV and V, and the market prices upon which the actual cost of the food materials on Sheet IV is based, giving the market unit which it is necessary to purchase in order to obtain these prices. Thus it may serve to show the different results of buying in large and small quantities, if the net weight of the food materials is taken at the time of purchase. It also provides a useful check on the accuracy of the calculations of the cost of small quantities. The statements as to the place and date of purchase afford criteria as to whether good judgment has been exercised in marketing, inasmuch as cost varies so greatly with locality and season.

The special aim of this sheet is to furnish a convenient marketing list and to guard against attractive menus with that underestimation of cost which tends to discredit dietary calculations as impractical, especially among those who do not realize how much can be accomplished by skillful choice and preparation of food materials. When the dietaries are to be prepared and the students do not buy the materials, Sheet III can be used to advantage as a requisition sheet.

Sheet Number IV is the detailed statement of the protein, calories and cost of the whole dietary. Where cost is involved, it is usually easier to make the calculations on food materials as purchased; if the food values are for edible material this should be definitely stated. At the end, space is arranged for a summary and comparison with the standard proposed on the first sheet. Differences of not more than five per cent may be considered negligible, but a slight excess is always better than a deficit, especially if no allowance is made for kitchen or table waste, which often amounts to ten per cent or more.

Sheet Number V provides for a statement of food combinations used in the menu, and if the calculations on the original food materials are tabulated on Sheet IV nothing more than weights and measures of the different ingredients will be required. If the recipe is calculated in detail on this sheet, then only the totals need be copied on Sheet IV. When recipe cards are on file, they may be referred to by number. Without this sheet, it is difficult for any one but the persons who planned the dietary to know how the different dishes proposed are to be made, and often important ingredients are omitted entirely.

Sheet No. VI provides for the calculation of calcium, iron and phosphorus in the dietary. Since a surplus of any or all of these elements is not usually disadvantageous so far as we know, it is more important to see whether the requirement is met than to determine the precise amount of each element present. This may be done by selecting from the dietary for calculation those foods which are the main sources of the element in question. If these supply enough to meet the requirement, calculations on the remaining foods need not be made. If the foods selected for calculation do not yield enough, the work should be continued until the requirement has been met or the dietary has been shown to be actually deficient in the element under consideration. If the dietary should prove deficient, it should, of course, be revised to meet the standards set for the ash constituents.

In the sample dietary sheet on page 74, this method of estimating the ash constituents is well illustrated. Milk alone yields more than enough calcium and phosphorus to meet the standards set, and consequently calculations on other foods are not made for these elements; but the dietary is barely adequate in iron, hence it was necessary to continue calculation till every food used was included.

At the present time it is not possible to set quantitative standards for the vitamines. The best thing to do until research develops further is to see that some food or foods rich in each vitamine is present. A list of vitamine-containing foods in the illustrative dietary used here is appended to Dietary Sheet No. VI.

An Example of a Complete Dietary.

DIETARY SHEET No. I.

Persons served: *One Child.*

No. meals served: *Four.*

No. days: *One.*

Place: *New York City.*

Date: *August , 1911.*

Method of Estimating Food Requirements.

For energy: *70 Calories per Kilogram.*

For protein: *10-15 Per cent of total fuel in form of Proteins.*

Proposed Individual Standards.

Sex.	Age.	Weight.		Protein, Gms.	Fuel Value, Calories	Cost, Dollars
		Lbs.	Kg.			
Boy	*10 years*	*63*	*28.5*	*50-75*	*1995*	*0.28*

Proposed Standard Per Capita Per Day.

Protein, Gms.	Fuel Value, Calories	Cost, Dollars

Proposed Standard Per Man Per Day.

Protein, Gms.	Fuel Value, Calories.	Cost, Dollars

DIETARY SHEET NO. II.

MENUS.

Meal	Dishes	Amounts
Breakfast,	*Canteloupe*	*1/2 small one*
8:00 A. M.	*Farina*	*3/4 c.* cooked*
	Top milk for mush	*2/3 c.*
	Toast	*2 slices bread*
	Butter	*3/4 tb.**
	Milk to drink	*2/3 c.*
Dinner,		
12:00 P. M.	*Creamed halibut*	*3/4 c.*
	Baked potato	*1 medium*
	Sliced tomatoes	*1 small one*
	Bread	*1 slice*
	Butter	*1/2 tb.*
	Milk sherbet	*3/4 c.*
Lunch,		
3:00 P. M.	*Bread*	*1 slice*
	Butter	*3/4 tb.*
Supper,		
6:00 P. M.	*Poached egg*	*1 egg*
	on	
	Toast	*1 slice bread*
	Apple sauce	*1/2 c.*
	Bread	*1 slice*
	Butter	*1/2 tb.*
	Cornstarch blanc mange	*2/3 c.*
	Milk.....*2/3 c. sugar*	*1 tsp.*

* c. denotes cup; tb. denotes tablespoon.

DIETARY SHEET NO. III.

PRICE LIST.

Material	Total Required	Market Price	Weight of Market Unit, Ounces	Place of Purchase	Date
Canteloupe	1/2 melon	3 for 25 c.	36.0	Upper West	August,
Farina	1 oz.	15 c. per pkg.	29.0	Side, New York City.	1911
Milk	1 qt.	9c. per qt.	34.4		
Bread	1/3 loaf	5c. per loaf	[illegible]		
Butter	3 lb. (1.6 oz.)	32c. per lb.	16.0		
Halibut steak	1 1/2 oz.	18c. per lb.	16.0		
Potatoes	1 medium	25c. per pk.	15[illegible].0		
Eggs	1	36c. per doz.	24.0		
Apples	1 small	12c. per qt.	32.0		
Cornstarch	2 lb.	10c. per pkg.	16.0		
Tomatoes	1 small	10c. per lb.	16.0		
Lemons	1	3 for 5c.	4 oz. juice		
Sugar	2 3/4 oz.	1/2 lb. for 20c.	56.0		
Vanilla	1/4 tsp.	25c. per bottle	2 0		
Flour	3/4 lb.	24 1/2 lbs. for 90c.	392.0		

DIETARY SHEET NO. IV.

NUTRITIVE VALUE AND COST.

Material	Weight Oz.	Weight Gms.	Protein, Gms.	Fuel Value, Calories.	Cost, Dollars
Canteloupe	*6.00*	*170.00*	*0.54*	*33.6*	*0.0400*
Farina	*0.97*	*27.60*	*3.04*	*100.0*	*0.0049*
Milk	*17.20*	*487.50*	*18.09*	*337.5*	*0.0450*
Bread	*4.00*	*113.40*	*10.52*	*293.6*	*0.0164*
Butter	*1.25*	*42.6*	*0.35*	*272.4*	*0.0125*
Creamed halibut	*See Sheet V.*		*11.45*	*210.5*	*0.0381*
Potato	*4.00*	*113.4*	*2.04*	*76.0*	*0.0032*
Milk sherbet	*See Sheet V.*		*4.88*	*270.7*	*0.0249*
Egg	*2.00*	*56.7*	*6.74*	*74.3*	*0.0300*
Apple sauce	*See Sheet V.*		*0.25*	*125.4*	*0.0227*
Cornstarch blanc mange	*See Sheet V.*		*5.24*	*204.8*	*0.0222*
Tomatoes	*2.00*	*56.7*	*0.52*	*13.0*	*0.0200*
Sugar (with blanc mange)	*0.25*	*7.1*	—	*28.4*	*0.0006*
TOTALS			*63.66*	*2036.2*	*0.2805*
STANDARD			*50–75*	*1995.0*	*0.2800*
DIFFERENCE				*+41.2* (2%)	*+0.0005* (0.2%)

DIETARY SHEET NO. V.

RECIPES.

Name	Materials	Measure	Weight Oz.	Weight Gms.	Protein, Gms.	Total Calories	Cost, Dollars
Creamed halibut							
	Halibut flaked.	⅓ *c.*	*1.50**	*42.6*	*5.88*	*38.4*	*0.0186*
	Milk	½ *c.*	*4.30*	*121.9*	*4.88*	*84.3*	*0.0113*
	Flour	¾ *tb.*	*0.18*	*5.3*	*0.60*	*18.6*	*0.0004*
	Butter	¾ *tb.*	*0.35*	*9.0*	*0.09*	*69.2*	*0.0078*
	Salt	*To season*					
Totals		¾ *c.*			*11.45*	*210.5*	*0.0381*
Milk sherbet	*Milk*	½ *c.*	*4.30*	*121.9*	*4.88*	*84.3*	*0.0113*
	Sugar	*3 tb.*	*1.50*	*42.6*	—	*180.4*	*0.0056*
	Lemon juice	*1 tb.*	*0.50*	*14.2*	—	*6.0*	*0.0080*
Totals		¾ *c.*			*4.88*	*270.7*	*0.0249*
Apple sauce	*Apple*	*1 small*	*3.00*	*85.0*	*0.25*	*40.2*	*0.0200*
	Sugar	*1½ tb.*	*0.75*	*21.3*	—	*85.2*	*0.0027*
	Water	*2 tb.*	*1.00*	*28.4*	—	—	—
Totals		½ *c.*			*0.25*	*125.4*	*0.0227*
Cornstarch blanc mange.							
	Milk	⅔ *c.*	*5.60*	*159.2*	*5.24*	*109.8*	*0.0148*
	Cornstarch	*2 tb.*	*0.65*	*18.5*	—	*66.6*	*0.0040*
	Sugar	½ *tb.*	*0.25*	*7.1*	—	*28.4*	*0.0009*
	Vanilla	¼ *tsp.*					*0.0025*
	Salt	*speck*					
Totals					*5.24*	*204.8*	*0.0322*

* As purchased.

CHIEF SOURCES OF VITAMINES IN THE DIETARY.

A VITAMINE (FAT-SOLUBLE)	B VITAMINE (WATER-SOLUBLE)	C VITAMINE (WATER-SOLUBLE)
Milk	*Milk*	
Eggs	*Eggs*	
	Potatoes	*Potatoes*
	Apples	*Apples*
Tomatoes	*Tomatoes*	*Tomatoes*
Butter		
	Lemon juice	*Lemon juice*
	Canteloupe	

DIETARY SHEET NO. VI.

ASH CONSTITUENTS.

Materials	Measure	Weight** Gms. E. P.	Calories	Ca Gms.	P Gms.	Fe Gms.
Bread, Graham *	$\frac{1}{3}$ *loaf*	113.4	295	***	***	0.0028
Cantaloupe	$\frac{1}{3}$ *melon*	84.0	34	***	***	0.0003
Egg	1	48.0	71	***	***	0.0014
Halibut		38.4	38	***	***	0.0006
Lemon juice	1 *tbsp.*	14.2	6	***	***	0.0001
Apple	1	63.6	40	***	***	0 0002
Farina		27.6	100	***	***	0.0002
Potato	1	91.5	76	***	***	0.0012
Tomato	1	56.7	13	***	***	0.0002
Milk	1 *qt.*	975.0	673	1.170	0.907	0.0023
TOTALS				1.170***	0.907***	0.0093
STANDARD				0.460	0.880	0.0100

* With white bread this dietary is inadequate in iron.

** Either this column or the calorie column may be used, referring to Tables XXVI and XXVII respectively.

*** Since the milk alone furnishes sufficient calcium and phosphorus the calculation of these elements in the other foods is omitted.

PROBLEM X.

TO SCORE A DIETARY.

In the laboratory it is frequently desirable to set out and compare two or more dietaries at the same time, and inasmuch as there are many factors to be taken into consideration besides supplying a specified amount of fuel at a given price, such as the adaptation of the diet to the locality, season, idiosyncrasies of the individual, availability of the food materials as prepared for the table, some of these factors often being overemphasized at the expense of others more important, it is believed that a dietary score card will help to give a clearer idea of the relative importance of the points which must generally be taken into consideration.

A Dietary Score Card.

Name of person or group.....

Place..... Date.....

Price of dietary..... Annual income.....

.....

Total Score—100 Points.

	Possible Score	Points Deficit	Actual Score
FOOD VALUE.....60 Points			
Fuel Value.....30 Points			
Consider adaptation to weight, age, and amount of muscular activity of each individual.	30		
Protein (considered as the source of nitrogen) 10 Points	10		
Is it suitable in kind and amount with regard to age and weight?			
Ash Constituents.....10 Points	10		
Are the following adequate?.....			
Phosphorus			
Iron			
Calcium			
Vitamines..... 10 Points	10		
Are the following adequately represented?			
A. (Fat-Soluble, Antixerophthalmic).			
B. (Water-Soluble, Antineuritic).			
C. (Water-Soluble, Antiscorbutic).			
FOOD SELECTION..... 22 Points			
Adaptation to Individual..... 10 Points	10		
Digestibility—ease, rapidity, etc.			
Variety—in food materials, form, color, etc.			
Quality of food materials—sanitary conditions, etc.			
Bulk			
Adaptation to Income..... 12 Points	12		
Is return on investment good?			
Is expenditure proportioned properly to total income?			
Is undue amount spent for flavor, form, color?			
FOOD PREPARATION AND SERVICE... 18 Points			
Cookery..... 12 Points	12		
Does it increase or decrease digestibility?			
Is there a waste of materials? (through under or over-cooking?)			
Is there a waste of time and of energy?			
Are flavor, form, and color preserved?			
Menu..... 3 Points	3		
Are combinations good physiologically and esthetically?			
Are sequences of dishes good, considering distribution of nutrients, form, color, and flavor?			
Service..... 3 Points	3		
Is it regular? neat? orderly?			

In judging the menus, the following general rules for the making of a menu should be borne in mind:

1. Conceive of the whole day as the unit, rather than the individual meal.

2. Endeavor to distribute the protein, fat and carbohydrate through the day, so that no meal will have a striking preponderance of one kind of foodstuff.

For example, meat served with macaroni and cheese concentrates the protein in one meal, potatoes with rice concentrate the starch, and fried potatoes and pie concentrate the fat.

3. With the exception of a few such staples as bread, butter and milk, try to avoid serving any food in the same form twice in the same day and serve it preferably only once in any form.

4. Try to avoid serving any food which gives character to a dish twice in the same meal, even in different forms. Do not, for instance, select tomato soup and tomato salad for the same meal.

5. At each meal, seek contrasts between successive courses, a bland course being followed by a more highly flavored course, and vice versa, to give a pleasing rhythm.

6. In each course endeavor to have harmonious combinations, as to flavor, color, form and texture.

7. As the number of courses increases, decrease the number of dishes and size of the servings in each.

Distribution of credits to the sub-topics has been left to the judgment of the person using the score card.

PROBLEM XI.

TO ABBREVIATE DIETARY CALCULATIONS WHEN LARGE QUANTITIES OF FOOD ARE INVOLVED.*

When dietary calculations are to be made on large quantities of food, as for example in an institution, the food consumed running into hundreds or thousands of pounds, it is possible to apply some "short cuts" which materially lessen the labor involved, without introducing any great amount of error. The scheme proposed here is one of the most accurate of its kind, and has the advantage of so grouping foods for calculation of total calories, protein and fat calories (carbohydrate calories being easily determined by taking the difference between total calories and the sum of the protein and fat calories) that one can subsequently analyze the dietary quite readily as to its content of milk, of fruits and vegetables, of meats, of cereals, of fats, or other items, to see whether these are so proportioned as to insure a liberal supply of ash constituents and vitamines, palatability without excessive cost, ease of digestion, laxative properties, etc.

In this scheme all the food materials are listed by groups according to certain marked similarities in chemical constitution and these groups are gathered into seven classes, the resemblance in distribution of protein, fat, and carbohydrate being strong within each class. The seven classes are as follows:

Class I. Cereals and cereal products.
Class II. Dried legumes and shelled nuts.
Class III. Vegetables and fruits.
Class IV. Sugars, syrups, jams, candies, starches (foods yielding carbohydrates almost exclusively).
Class V. Fats and oils (including separator cream and very fat meats).
Class VI. Milk (all kinds except skimmed), gravity cream, ice cream, chocolate, cocoa (foods with little carbohydrate but rich in both fat and protein).
Class VII. Meats, eggs, cheese, skim milk (all animal foods not listed in Classes V or VI).

Within each class, some staple food is taken as the "standard" or "type." Thus for Class I, Cereals and Cereal Products, wheat is designated as the type. Wheat and wheat products have fuel values per pound differing only a little from each other. These have been averaged (weighting the average to take acount of those occurring with greatest frequency, as wheat flour for example) and the averages are called the "type factors" for Class I. To use these, one adds together the original weights in pounds of

* Adapted from "Abridged Dietary Calculations for Rations in Quantity," A. R. Rose, The Modern Hospital, Volume 14, Number 6, (1920). A still more abbreviated method may be found in the original paper.

all the wheat products which have been used in the dietary, and multiplies this total weight once for all by the "type class factors," viz., for total calories, 1620; for protein calories, 210; for fat calories, 40.

Oatmeal has a slightly higher fuel value per pound than the wheat group, and ordinarily one would get the total calories per pound by multiplying the total number of pounds by 1800. But the labor will be lessened by altering the original weight of the oatmeal so that when this "adjusted" weight is multiplied by the same factor as is used for the wheat group the total calories yielded will be correct. This may be accomplished by multiplying the original weight of oatmeal by 1.1, adding its weight to the wheat group, and getting total calories for both in one operation. In other words, the weights of different kinds of food within a class are so adjusted either singly or in groups that they may be added together and one multiplication by the "type class factor" determine the total calories for the entire class.

Similar adjustments are made to enable one to use a single factor for determining the protein calories of a class. Thus in the case of oatmeal the percentage of protein is considerably higher than the percentage average for the wheat group. But by increasing the weight 40 per cent the same factor can be used for both wheat and oatmeal. In like manner a weight-adjusting-factor can be applied to the determination of the fat calories. To carry out the method in detail a set of such weight-adjusting-factors must be at hand, and one which is the result of much careful study of the whole situation is given below.

WEIGHT-ADJUSTING FACTORS.

To Permit the Use of "Type Class Factors" for the Calculation of the Total Calories, Protein Calories, and Fat Calories for a Specified "Class" of Food Materials.

CLASS	GROUP	TOTAL CALORIES	PROTEIN CALORIES	FAT CALORIES
I.	Cereals and Cereal Products.			
1.	Wheat and wheat products	1.0	1.0	1.0
2.	Rice and rye	1.0	0.7	0.3
3.	Corn, meal and flour, corn flakes, post toasties, and similar ready-to-serve patented products, hominy, barley and buckwheat	1.0	0.7	1.4
4.	Oatmeal	1.1	1.4	7.0
5.	Bread	0.7	0.8	1.5
6.	Bakery products:			
	a. Crackers, toasted breads	1.1	0.9	8.0
	b. Home-made cookies and fried cakes	2.0	0.6	20.0
	c. Cakes and bakery cookies	1.0	0.6	11.0
II.	Dry Legumes and Shelled Nuts.			
7.	a. Beans, peas and lentils	1.0	1.0 [1]	1.0 [2]
	b. Baked beans	0.33	0.33	1.33
8.	Shelled nuts [3]	1.7	0.9	30.0
III.	Vegetables and Fruits.			
9.	a. White potatoes	1.0	1.0	...
	b. Sweet potatoes	1.5	1.0	...
10.	Roots	0.5	0.6	...
11.	Stem and leaf types, incl. onion and mushroom	0.4	0.6	...
12.	Green vegetables in pod and seed [4]	0.8	1.5	...
13.	Fruit served as vegetable (e. g., squash)	0.3	0.6	...
14.	Sweet fruits:			
	a. Fresh	0.8	0.5	...
	b. Canned	1.3	0.5	...
	c. Dried	4.4	2.2	...
IV.	Sugars, Syrups, Starches, etc.			
15.	Sugar, candy, starch, etc	1.0	...	...
16.	Syrups, jellies, jams, preserves, etc	0.75	...	...
V.	Fats and Oils.			
17.	Lard, suet, vegetable oils, butter, very fat bacon and pork	1.0	...	1.0
18.	a. Less fat bacon and pork	0.7	...	0.7
	b. Separator cream and salad dressings, etc	0.5	...	0.5
VI.	Foods Rich in Fat and Protein—little Carbohydrate.			
19.	Milk—fresh, whole	1.0	1.0	1.0
20.	Milk—evaporated	2.0	2.0	2.0
21.	Milk—desiccated; cocoa, and chocolate	7.5	6.5	7.5

[1] For large amounts of kidney beans use 1.8 for protein.

[2] For soy beans use 6.0 for fat.

[3] Nuts are almost negligible in ordinary diets; usually deducting half the "as purchased" weight for shell will be sufficiently accurate. For chestnuts use the factors 1.1, 0.4, 4.0, in place of those given in the table if they are stored; if fresh, only half these factors.

[4] Including canned goods; e. g., peas, corn, etc.

CLASS	GROUP	TOTAL CAL-ORIES	PROTEIN CAL-ORIES	FAT CAL-ORIES
	22. a. Condensed milk	2.3	3.0	2.4
	b. Condensed milk—sweetened	4.7	2.6	2.1
	c. Gravity cream	2.7	0.7	4.5
	d. Ice cream	1.6	1.0	0.5
VII.	Animal Products Exclusive of Whole Milk and Fats.			
	23. Beef, veal, liver, pigs' feet, tripe, etc	1.0	1.0	1.0
	24. Ham, pork, lean salt pork, pork-beef sausage	2.2	1.3	2.8
	25. Mutton, lamb, corn beef, beef sausage	2.0	1.3	2.2
	26. Sausages of fatter types than those above, fat pork and ham, bacon too lean for Class V, deviled ham, head cheese	3.0	1.3	4.0
	27. Fowl [5]	1.0	1.0	1.0
	28. Fresh fish, entrails removed	0.5	0.7	0.3
	29. Preserved fish	1.0	1.4	1.1
	30. Shell fish	0.3	0.3	0.0
	31. Eggs [6]	1.0	0.6	1.0
	32. Cheese	3.0	1.7	3.0
	33a. Milk—skimmed	0.3	0.25	0.0
	b. Milk—skimmed—desiccated	2.6	2.0	0.3

[5] If broilers, use only half the value of these factors.
[6] If desiccated, use eight times these factors.

With the above list as a guide, the various food materials composing the dietary are set down in their respective classes and groups, the weight of each being stated in pounds, and all the foods of a group being added together. Then the weight-adjusting factors are applied to these totals. For example, we have in our list 833.5 pounds of wheat flour and 91.7 pounds of cream of wheat; both of these, being cereal products, belong to Class I; being wheat products they belong to Group I within the class and, since wheat is the "standard" from which all the weight-adjusting-factors are derived, the weight-adjusting-factors for this group are all unity. If, furthermore, we have 111.2 pounds of oatmeal, this also belongs to Class I, but to Group 4, and the adjustments are made thus:

Food Material Original Weight		Adjusted Weights for Calculating		
	Pounds	Total Calories	Protein Calories	Fat Calories
Oatmeal	111.2	111.2 x 1.1 = 122.32	111.2 x 1.4 = 155.68	111.2 x 7.0 = 778.4

When all "group" adjustments are made, the sum of the weights in each class, now adjusted for "total calories," are added together. This sum, multiplied by the proper "type class factor," (see table

below) gives the total calories for the class. Protein and fat calories are calculated in similar fashion.

TYPE CLASS FACTORS.

For Calculating Fuel Values from Adjusted Weights.

CLASS	GROUP	FOR TOTAL CALORIES	FOR PROTEIN CALORIES	FOR FAT CALORIES
I.	Cereals and cereal products....	1620	210	40
II.	Dried legumes and shelled nuts.	1580	400	70
III.	Vegetables and fruits.....	300	30	—
IV.	Sugars, syrups, etc.....	1800	—	—
V.	Fats and oils.....	3500	—	3500
VI.	Foods rich in fat and protein ..	315	60	160
VII.	Animal foods not in Classes V or VI.....	600	300	350

When the calories have been determined for each of the seven classes in this way, their respective sums will give the total calories, protein calories, and fat calories of the whole ration. The calculations at this point will appear as follows:

EXAMPLE OF ADJUSTED WEIGHTS, TYPE CLASS FACTORS, AND CALORIES FOR EACH CLASS OF FOOD MATERIALS.

(Taken from an actual dietary.)

For Total Calories.

CLASS	ADJUSTED WEIGHT	TYPE FACTOR	CALORIES
I	1230	1620	2,092,600
II	87	1580	137,460
III	2062	300	618,600
IV	244	1800	439,200
V	107	3500	374,500
VI	792	315	249,480
VII	1953	600	1,171,800
Total			5,083,640

For Protein Calories.

CLASS	ADJUSTED WEIGHT	TYPE FACTOR	CALORIES
I	1233	210	258,930
II	87	400	34,800
III	1985	30	58,550
VI	736	60	44,160
VII	1747	300	524,100
Total			920,540

TYPE CLASS FACTORS—*Continued.*

FOR FAT CALORIES.

CLASS	ADJUSTED WEIGHT	TYPE FACTOR	CALORIES
I	2058	40	82,320
II	87	70	6,090
V	107	3500	374,500
VI	740	160	120,400
VII	1848	350	647,700
Total			1,231,010

A good idea of the labor saving in the use of the abbreviated method as compared with the usual one may be made by a survey of the figures for a single class of food materials (Class I), taken from an actual dietary. It is estimated that the accuracy is nearly as great in the second method as the first, unless large quantities of very unusual foods occur. These might best be calculated separately and added to their respective classes.

A COMPARISON OF THE LABOR INVOLVED IN CALCULATING DIETARIES BY THE USUAL METHOD AND AN ABBREVIATED METHOD.

A. USUAL METHOD OF CALCULATING FUEL VALUES

	Food Materials by Groups	Food Weight Pounds	Cal. per lb.	Total Calories	Cal. per lb.	Protein Calories	Cal. per lb.	Fat Calories
1	Wheat flour	1633	1620	2617700	203	331500	41	66953
	Cream of wheat	229	1641	375870	200	45800	48	10992
	Puffed wheat	4	1656	6624	220	880	44	176
	Shredded wheat	102	1628	166056	220	22440	74	7548
	Macaroni	122	1626	198372	227	27694	41	5002
	Total pounds in group 1.	2090						
2	Rice	833	1580	1324470	146	121615	13	10829
3	Corn meal	283	1630	461290	167	47261	78	22074
	Corn flakes	89	1631	145159	101	8989	54	4806
	Hominy	9	1609	14474	151	1359	25	225
	Post toasties	124	1637	202988	92	11409	81	10044
	Grape nuts	8	1765	14120	248	1984	205	1640
	Total pounds in group 3.	513						
4	Oatmeal	321	1803	578763	303	97363	298	95658
5	Bread	4353	1184	1151395	170	740010	53	230709
6a	Crackers	71	1863	132202	187	13277	358	25418
6b	Cookies	12	1527	18324	128	1536	395	4740
	Calories in Class I			11409782		1473016		496726

B. ABBREVIATED METHOD.

Group *	Weight Pounds	Adjusted Weights for Calculating					
		Total Calories		Protein Calories		Fat Calories	
		W. A. F.†	Pounds	W. A. F.†	Pounds	W. A. F.†	Pounds
1	2090	1.0	2090	1.0	2090	1.0	2090
2	833	1.0	833	0.7‡	583	0.3	250
3	513	1.0	513	0.7‡	359	1.5‡	770
4	321	1.1‡	353	1.4	449	7.5	2397
5	4353	0.7	3047	0.8	3482	1.5‡	6530
6a	71	1.1‡	80	0.9	62	8.0	568
6b	12	1.2	14	0.6	7	20.0	240
Sum of adjusted weights.....	.....		6930		7024		12845
Type factors for Class I.....	.....		1620		210		40
Calories in Class I.....			11226600		1475040		513800

* Same foods as in Groups above.

† Weight-adjusting factor.

‡ In practice the weights of items with repeating correctional factors are added and a single multiplication made.

THE DISTRIBUTION OF CALORIES IN THE DIETARY.

When the fuel values of the dietary have been calculated in this way it is a simple matter to study the distribution of the food through the seven classes into which it has been divided by determining the percentage of the total calories contributed by each class. The calories derived from cereals (Class I) may range from 25 to 50 per cent of the total calories, but it is doubtful if a diet having more than 45 per cent of its total calories derived from cereals will be adequate in mineral constituents and vitamines and sufficiently palatable. Again, it would seem desirable to have not less than 8 per cent of the total calories derived from milk, and not less than 15 per cent from vegetables and fruits. It is difficult to make more than 2 or 3 per cent of dried legumes acceptable; ordinarily nuts form so small an item in an institutional ration as to be practically negligible. In Class IV (sugars, jams, starches, etc.), the sweet foods are apt to exceed greatly the starches and it seems generally desirable that the calories of this group should not exceed 10 per cent of the total calories, as high figures here tend to low values for mineral constituents and vitamines. Excessively high fat is not very common in dietaries for large groups,

but since food materials are calculated on the "As Purchased" basis, due regard must be had for the actual consumption of fat as compared with that purchased. Dietaries too high in fat will be difficult to digest, and those too low tend to be low in total fuel value and to lack palatability. It must also be borne in mind that some of the fat in the dietary occurs in the milk and meats, accounted for in other groups. It would seem desirable that the fat represented in this group should fall between the limits of 5 and 10 per cent. Meats and other high protein foods, relatively less in need of emphasis than several of the other groups, may fluctuate within rather wide limits, depending in part on the money left after such foods as milk and vegetables are provided for, and in part on the proportion of protein derived from the rest of the dietary. In general, it would seem wise not to have the protein calories as a whole less than 10 or more than 15 per cent of the total calories.

PART III.

REFERENCE TABLES.

TABLE XVI.

APPROXIMATE AMOUNT OF REFUSE IN COMMON FOOD MATERALS AS PURCHASED.*

	PER CENT.
BEEF.	
Brisket, medium fat	23
Corned	8
Chuck, lean	20
Flank, lean	1
Flank, medium fat	10
Heart	6
Kidney	20
Liver	7
Loin, lean	13
Loin, medium fat	13
Neck, lean	30
Neck, medium fat	28
Plate, medium fat	17
Porterhouse steak	13
Ribs, medium fat	21
Round, medium fat	7
Rump, lean	14
Rump, medium fat	21
Shank, fore, medium fat	37
Shank, hind, medium fat	54
Sirloin steak	13
Top sirloin	3
Tongue	27
EGGS.	
Hens'	11
FISH.	
Bass, black, whole	55
Bass, striped, whole	55
Blackfish, whole	60
FRUITS.	
Apples	25
Apricots	6
Bananas	35
Cherries	5
Dates, dried	10
Grapes	25
Lemons	30
Muskmelons	50
Nectarines	6
Oranges	27
Peaches	18
Pears	10
Plums	5
Prunes, dried	15
Raisins, dried	10
Strawberries	5
Watermelons	60
LAMB.	
Breast	19
Chops (broiled)	14
Leg, hind, medium fat	17
Loin	15
Neck	18
Shoulder	20
MUTTON.	
Chuck, medium fat	21
Flank, medium fat	10
Leg, medium fat	18
Loin, medium fat	16
Neck, medium fat	27
Shoulder, medium fat	22
NUTS.	
Almonds	45
Beechnuts	40
Brazil nuts	50
Butternuts	86
Chestnuts, fresh	16
Chestnuts, dried	24
Coconuts	48
Filberts	52
Hickory nuts	62
Peanuts	25
Pecans	46
Walnuts, black	74
Walnuts, California	73
PORK.	
Bacon, smoked, medium fat	8
Feet, fresh	74
Feet, pickled	36
Ham, fresh, lean	1
Ham, fresh, medium fat	11

* The figures are taken to the nearest whole number from Bull. 28, Office of Experiment Stations, U. S. Dept. Agriculture.

	PER CENT.
Ham, smoked, lean	11
Ham, smoked, medium fat	14
Head cheese	12
Loin chops, medium fat	20
Shoulder, fresh	12
Shoulder, smoked	18
Side (not including lard and kidney)	12
POULTRY AND GAME.	
Chicken Broilers	42
Chicken, dressed	18
Fowl	26
Goose, young	18
Turkey	23
SAUSAGE.	
Bologna	3
Summer	7
VEAL.	
Breast, medium fat	20
Chuck, medium fat	19
Leg, medium fat	14
Loin, lean	22
Loin, medium fat	16
Neck	32
Rib, medium fat	25
Rump	30
Shank, fore	40
Shank, hind, medium fat	62
Shoulder, lean	18
Shoulder, medium fat	23
VEGETABLES.	
Beans, butter, green	50
Beans, lima, fresh	55
Beans, string	7
Beets	20
Cabbage	15
Carrots	20
Celery	20
Corn, green	61
Cucumbers	15
Lettuce	15
Okra	12
Onions	10
Parsnips	20
Peas, green	45
Potatoes	20
Pumpkins	50
Radishes	30
Rhubarb	40
Rutabagas	30
Squash	50
Turnips	30

TABLE XVII.

Measures of Weight, Metric System.

10 milligrams (mg.)	= 1 centigram (cg.)
10 centigrams	= 1 decigram (dg.)
10 decigrams	= 1 gram (g.)
10 grams	= 1 dekagram (Dg.)
10 dekagrams	= 1 hektogram (Hg.)
10 hektograms	= 1 kilogram (Kg.)

TABLE XVIII.

English Equivalents for Metric Weights and Measures

1 meter	= 39.37	inch.
1 centimeter	= 0.3937	inch.
1 inch	= 2.54	centimeters.
1 liter	= 1.0567	quarts.
1 gram	= 0.0353	ounces.
1 kilogram	= 2.2045	pounds.
1 ounce	= 28.35	grams.
1 pound	= 453.6	grams.
1 cup of fluid	= 236.0	cubic centimeters.
1 tablespoon of fluid	= 15.0	cubic centimeters.
1 teaspoon of fluid	= 5.0	cubic centimeters.

TABLE XIX.

Weights Corresponding to Common Measures of Food Materials.*

Material	Weight in Ounces	
	1 Cup	1 Tablespoon
Almonds, chopped	3	
shelled	4	
Apples, dried	3	
Apricots, dried		
Baking powder		3/8
Barley, flour	8	3/5
pearl	7½	½
Beans, navy, dried	7	
lima, dried	5½	
Bran	2½	
Bread crumbs, oven dried	3½	
soft	2	
stale	3	
Butter	8	½
Buttermilk	8½	
Celery, cut in ¼ inch pieces	4½	
Cheese, American, grated, dry	2	1/8
fresh	4	¼
Chocolate, unsweetened, grated		1/6
Citron, chopped	2 4/5	
Cocoa	4½	¼
Coconut, shredded	2 4/5	
Coffee	4	¼
Corn, canned	9	
fresh	7	
Cornmeal	5	1/3

* Adapted from Rose's Feeding the Family.

TABLE XIX—*Continued.*

Material	Weight in Ounces	
	1 Cup	1 Tablespoon
Cornstarch	4½	⅓
Cottolene	6⅓	⅖
Cracker crumbs	4¼	¼
Cranberries, fresh	3½	
Cream, thick	7¾	⅔
thin	8	½
Crisco	6⅓	⅖
Currants, dried	5½	
Dates, stoned	6⅕	
unstoned	5¾	
Farina	6	⅓
Figs, chopped	5⅗	
Flour, buckwheat	5½	⅖
graham	5	⅓
rice	8½	½
rye	5	⅓
wheat (unsifted)	4½	⅓
wheat (sifted)	4	¼
Gelatin, granulated		⅓
Hickory nuts, chopped	6	
Hominy grits, uncooked	5½	
cooked	9	
Lard	8	½
Lemon juice	8	½
Macaroni, cooked (1 inch pieces)	5⅕	
uncooked (10 sticks, 9 inches long)	3½	
Milk, fresh, skim	8½	7/10
whole	8½	7/10
condensed, sweetened	11	⅔
condensed, unsweetened	8	⅗
dried	3⅖	⅕
Molasses, cane	12	⅘
Oatmeal	5½	
Oats, rolled	2½	
Oleomargarine	7	½
Olive oil		⅖
Orange juice	8	½
Peanuts, chopped	3 7/10	
shelled	4⅓	
Peas, canned, drained	6	
dried	7½	½
Pecans, shelled	5½	
Pineapple, canned, grated	8½	
Pumpkin, cooked	6½	
Raisins	5	
Rhubarb, fresh, 1 inch pieces	4	
Rice, uncooked	7	½
steamed	5⅓	
Salt		½
Soda		½
Spinach, cooked and chopped	8½	
Squash, cooked (Hubbard)	7¾	
Suet	3½	

TABLE XIX—*Continued.*

Material	Weight in Ounces	
	1 Cup	1 Tablespoon
Sugar, brown	5⅘	⅓
granulated	7⅖	½
powdered	6	½
Tapioca	6½	½
Tea	2½	1/6
Tomatoes, canned	9	
Turnips, ½ inch cubes	4¾	
Walnuts, English, chopped	3	
Wheat, flaked	3	

TABLE XX.

WEIGHT PER BUSHEL OF SOME COMMON FOOD MATERIALS.*

Food	Pounds per Bushel	Food	Pounds per Bushel
Apples	44–50	Peaches	48–50
Beans	60	Peanuts	20–25
Beets	50–60	Pears	45–58
Carrots	50	Peas (dried)	60
Cranberries	32–40	Potatoes (white)	60
Cucumbers	48–50	Potatoes (sweet)	50–56
Onions	50–57	Tomatoes	50–60
Parsnips	42–50	Turnips	50–60

* U. S. Bureau of Standards, Washington, D. C.

TABLE XXI.

Conversion Tables—Ounces and Pounds to Grams.

A. Ounces to Grams.

Ounces	Grams	Ounces	Grams
1/16	1.77	2	56.70
1/15	1.89	3	85.05
1/14	2.02	4	113.40
1/13	2.19	5	141.75
1/12	2.36	6	170.10
1/11	2.58	7	198.45
1/10	2.84	8	226.80
1/9	3.15	9	255.15
1/8	3.54	10	283.50
1/7	4.05	11	311.84
1/6	4.73	12	340.20
1/5	5.67	13	368.54
1/4	7.09	14	396.90
1/3	9.45	15	425.25
1/2	14.17	16	453.60
1	28.35		

B. Pounds to Grams.

Pounds.	Grams.
1	453.6
2	907
2.2	1000
3	1361
4	1814
5	2267
6	2722
7	3175
8	3629
9	4082
10	4536

TABLE XXII.

Conversion Table—Grams to Ounces.

Grams	Ounces	Grams	Ounces
1	0.035	56	1.975
2	0.071	57	2.010
3	0.106	58	2.046
4	0.141	59	2.081
5	0.176	60	2.116
6	0.212	61	2.151
7	0.247	62	2.187
8	0.283	63	2.222
9	0.317	64	2.257
10	0.353	65	2.293
11	0.398	66	2.328
12	0.423	67	2.363
13	0.458	68	2.398
14	0.494	69	2.434
15	0.529	70	2.467
16	0.564	71	2.504
17	0.599	72	2.539
18	0.635	73	2.575
19	0.670	74	2.610
20	0.705	75	2.645
21	0.741	76	2.681
22	0.776	77	2.716
23	0.811	78	2.751
24	0.846	79	2.786
25	0.882	80	2.822
26	0.917	81	2.857
27	0.953	82	2.892
28	0.998	83	2.927
29	1.023	84	2.963
30	1.058	85	2.998
31	1.093	86	3.033
32	1.128	87	3.068
33	1.164	88	3.104
34	1.199	89	3.139
35	1.234	90	3.174
36	1.269	91	3.210
37	1.305	92	3.245
38	1.340	93	3.280
39	1.376	94	3.315
40	1.411	95	3.351
41	1.446	96	3.386
42	1.481	97	3.421
43	1.517	98	3.457
44	1.552	99	3.492
45	1.587	100	3.527
46	1.622	113	4
47	1.658	200	7
48	1.693	227	8
49	1.728	250	8.8
50	1.764	300	10.5
51	1.799	400	14
52	1.834	453.6	16
53	1.869	500	17.6
54	1.905	907	32
55	1.940	1000	35.2

TABLE XXIII

FOOD VALUES OF FOOD MATERIALS USED CHIEFLY BY WEIGHT IN TERMS OF STANDARD UNITS.*

Food Material	S. P.	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars
		lbs	oz.	gms.					
Bass, striped,	...	...	.....	1	0.088	0.022	.....	0.55	.....
whole, A. P.	...	...	1	.....	2.49	0.62	.....	15.6	.....
	...	1	.....	.....	39.92	9.98	.....	249	.....
	1	...	6.41	181.8	16.00	4.00	.....	100	.....
Bass, striped,	...	...	.....	1	0.186	0.028	.....	1.00	.....
whole, E. P.	...	...	1	.....	5.27	0.79	.....	28.2	.....
	...	1	.....	.....	84.38	12.70	.....	452	.....
	1	...	3.54	100.4	18.68	2.81	.....	100	.....
Beans, baked,	...	...	.....	1	0.069	0.025	0.196	1.29	.....
canned	...	...	1	.....	1.96	0.71	5.56	36.5	.....
	...	1	.....	.....	31.30	11.34	88.90	583	.....
	1	...	2.74	77.8	5.37	1.95	15.25	100	.....
Beans, kidney,	...	...	.....	1	0.070	0.002	0.185	1.04	.....
red, canned,	...	...	1	.....	1.98	0.06	5.24	29.4	.....
	...	1	.....	.....	31.68	0.91	83.84	470.08	.....
	1	...	3.39	96.1	6.73	0.19	17.78	100	.....
Beans, string,	...	...	.....	1	0.011	0.001	0.038	0.21	.....
canned	...	...	1	.....	0.31	0.01	1.08	5.83	.....
	...	1	.....	.....	4.98	0.45	17.23	93	.....
	1	...	17.21	487.8	5.37	0.48	18.53	100	.....
Beef, corned,	...	...	.....	1	0.143	0.238	.....	2.71	.....
A. P.	...	...	1	.....	4.05	6.75	.....	76.9	.....
	...	1	.....	.....	64.86	107.96	.....	1231	.....
	1	...	1.30	36.8	5.27	8.77	.....	100	.....
Beef, corned,	...	...	.....	1	0.156	0.262	.....	2.98	.....
E. P.	...	...	1	.....	4.42	7.43	.....	84.5	.....
	...	1	.....	.....	70.76	118.84	.....	1353	.....
	1	...	1.18	33.5	5.23	8.79	.....	100	.....
Beef, flank,	...	...	.....	1	0.170	0.199	.....	2.39	.....
medium fat,	...	...	1	.....	4.82	5.39	.....	67.8	.....
A. P.	...	1	.....	.....	77.11	86.18	.....	1084	.....
	1	...	1.47	41.8	7.11	7.95	.....	100	.....
Beef juice	...	...	.....	1	0.049	0.006	.....	0.25	.....
	...	...	1	.....	1.39	0.17	.....	7.0	.....
	...	1	.....	.....	22.24	2.72	.....	113	.....
	1	...	14.11	400.0	19.60	2.40	.....	100	.....
Beef, kidney,	...	...	.....	1	0.137	0.019	.....	0.72	.....
A. P.	...	...	1	.....	3.88	0.54	.....	20.4	.....
	...	1	.....	.....	62.14	8.62	.....	326	.....
	1	...	4.91	139.1	19.06	2.64	.....	100	.....

* Calculated principally from Bulletin 28, Office of Experiment Stations, U. S. Department of Agriculture. For other foods see Tables XVI, XXIV, and XXV.

TABLE XXIII.

FOOD VALUES OF FOOD MATERIALS USED CHIEFLY BY WEIGHT IN TERMS OF STANDARD UNITS.—*Continued.*

Food Material	S. P.	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars
		lbs.	oz.	gms.					
Beef, kidney,				1	0.166	0.048	0.004	1.11	
E. P.			1		4.71	1.36	0.11	31.5	
		1			75.30	21.77	1.81	504	
	1		3.17	89.9	14.92	4.31	0.36	100	
Beef, liver,				1	0.202	0.031	0.025	1.19	
A. P.			1		5.73	0.88	0.71	33.7	
		1			91.62	14.06	11.34	538	
	1		2.97	84.2	17.00	2.61	2.11	100	
Beef, liver,				1	0.204	0.045	0.017	1.29	
E. P.			1		5.78	1.28	0.48	36.5	
		1			92.53	20.41	7.71	584	
	1		2.73	77.6	15.83	3.49	1.31	100	
Beef, loin,				1	0.171	0.111		1.68	
lean, A. P.			1		4.85	3.15		47.7	
		1			77.57	50.35		763	
	1		2.09	59.4	10.16	6.59		100	
Beef, loin,				1	0.197	0.127		1.93	
lean, E. P.			1		5.58	3.60		54.7	
		1			89.36	57.61		876	
	1		1.83	51.8	10.18	6.57		100	
Beef, loin,				1	0.161	0.175		2.22	
medium fat,			1		4.56	4.96		62.9	
A. P.		1			73.03	79.38		1007	
	1		1.59	45.1	7.26	7.89		100	
Beef, loin,				1	0.185	0.202		2.56	
medium fat,			1		5.24	5.73		72.5	
E. P.		1			83.71	91.62		1160	
	1		1.38	39.1	7.23	7.90		100	
Beef, lungs,				1	0.164	0.032		0.94	
A. P.			1		4.65	0.91		26.8	
		1			74.39	14.51		428	
	1		3.74	106	17.37	3.39		100	
Beef marrow				1	0.022	0.928		8.44	
			1		0.62	26.31		239.3	
		1			9.92	420.94		3828	
	1		0.42	11.8	0.26	11.00		100	
Beef, navel,				1	0.298	0.006		1.25	
lean, A. P.			1		8.45	0.17		35.3	
		1			135.17	2.72		565	
	1		2.83	80.3	23.92	0.48		100	

TABLE XXIII.

FOOD VALUES OF FOOD MATERIALS USED CHIEFLY BY WEIGHT IN TERMS OF STANDARD UNITS.—*Continued.*

Food Material	S. P.	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars
		lbs.	oz.	gms.					
Beef, navel,				1	0.307	0.006		1.28	
lean, E. P.			1		8.70	0.17		36.4	
		1			139.50	2.72		582	
	1		2.75	78.0	23.95	0.47		100	
Beef, neck,				1	0.151	0.059		1.14	
lean, A. P.			1		4.28	1.67		32.2	
		1			68.50	26.76		515	
	1		3.11	88.1	13.30	5.20		100	
Beef, neck,				1	0.214	0.084		1.61	
lean, E. P.			1		6.07	2.38		45.7	
		1			97.08	38.10		731	
	1		2.19	62.0	13.27	5.21		100	
Beef, neck,				1	0.145	0.119		1.65	
medium fat,			1		4.11	3.37		46.8	
A. P.		1			65.76	53.98		749	
	1		2.14	60.6	8.78	7.21		100	
Beef, neck,				1	0.201	0.165		2.29	
medium fat,			1		5.70	4.68		64.9	
E. P.		1			91.18	74.84		1038	
	1		1.54	43.7	8.78	7.21		100	
Beef, plate,				1	0.130	0.155		1.92	
lean, A. P.			1		3.69	4.39		54.3	
		1			58.98	70.30		869	
	1		1.84	52.2	6.79	8.09		100	
Beef, plate,				1	0.156	0.188		2.32	
lean, E. P.			1		4.42	5.33		65.7	
		1			70.73	85.28		1051	
	1		1.52	43.2	6.74	8.12		100	
Beef, plate,				1	0.138	0.244		2.75	
medium fat,			1		3.91	6.92		77.9	
A. P		1			62.60	110.69		1247	
	1		1.28	36.4	5.02	8.88		100	
Beef, plate,				1	0.165	0.291		3.28	
medium fat,			1		4.68	8.25		92.9	
E. P.		1			74.84	132.00		1487	
	1		1.08	30.5	5.03	8.87		100	
Beef, porter-				1	0.191	0.179		2.38	
house steak,			1		5.41	5.07		67.3	
A. P.		1			86.64	81.19		1077	
	1		1.48	42.1	8.04	7.54		100	

TABLE XXIII.

FOOD VALUES OF FOOD MATERIALS USED CHIEFLY BY WEIGHT IN TERMS OF STANDARD UNITS.—*Continued.*

Food Material	Qt.	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars
		lbs.	oz.	gms.					
Beef, porterhouse steak, E. P.				1	0.219	0.204		2.71	
			1		6.21	5.78		77.1	
		1			99.34	92.53		1230	
	1		1.30	36.9	8.07	7.52		100	
Beef, rib roll, lean, A. P.				1	0.202	0.105		1.75	
			1		5.73	2.98		49.7	
		1			91.62	47.63		795	
	1		2.01	57.0	11.52	5.99		100	
Beef, rib roll, medium fat, A. P.				1	0.193	0.167		2.28	
			1		5.47	4.74		64.5	
		1			87.54	75.75		1032	
	1		1.55	44.0	8.48	7.34		100	
Beef, ribs, lean, A. P.				1	0.152	0.093		1.45	
			1		4.31	2.64		40.97	
		1			68.95	42.18		655	
	1		2.44	69.2	10.52	6.43		100	
Beef, ribs, lean, E. P.				1	0.196	0.120		1.86	
			1		5.56	3.40		52.8	
		1			88.90	54.42		845	
	1		1.89	53.6	10.51	6.44		100	
Beef, ribs, medium fat, A. P.				1	0.139	0.212		2.46	
			1		3.94	6.01		69.9	
		1			63.03	96.16		1118	
	1		1.43	40.6	5.64	8.60		100	
Beef, ribs, medium fat, E. P.				1	0.175	0.266		3.09	
			1		4.96	7.54		87.7	
		1			79.38	120.66		1403	
	1		1.14	32.3	5.66	8.59		100	
Beef, round, lean, A. P.				1	0.195	0.073		1.44	
			1		5.53	2.07		40.7	
		1			88.45	33.11		652	
	1		2.45	69.6	13.57	5.08		100	
Beef, round, lean, E. P.				1	0.213	0.079		1.56	
			1		6.04	2.24		44.3	
		1			96.62	35.84		709	
	1		2.26	64.0	13.63	5.05		100	
Beef, round, medium fat, A. P.				1	0.190	0.128		1.91	
			1		5.39	3.63		54.2	
		1			86.18	58.06		867	
	1		1.85	52.3	9.94	6.70		100	

TABLE XXIII.

FOOD VALUES OF FOOD MATERIALS USED CHIEFLY BY WEIGHT IN TERMS OF STANDARD UNITS.—*Continued.*

Food Material	S. P.	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars
		lbs.	oz.	gms.					
Beef, round,				1	0.203	0.136		2.04	
medium fat,			1		5.76	3.86		57.7	
E. P.		1			92.07	61.69		923	
	1		1.73	49.1	9.96	6.68		100	
Beef, rump,				1	0.191	0.110		1.75	
lean, A. P.			1		5.42	3.12		49.7	
		1			86.64	49.90		796	
	1		2.01	57.0	10.89	6.33		100	
Beef, rump,				1	0.209	0.137		2.07	
lean, E. P.			1		5.93	3.88		58.7	
		1			94.80	62.14		938	
	1		1.70	48.3	10.10	6.62		100	
Beef, rump,				1	0.138	0.202		2.37	
medium fat,			1		3.91	5.73		67.2	
A. P.		1			62.60	91.62		1075	
	1		1.49	42.2	5.82	8.52		100	
Beef, rump,				1	0.174	0.255		2.99	
medium fat,			1		4.93	7.23		84.8	
E. P.		1			78.92	115.68		1357	
	1		1.18	33.4	5.82	8.53		100	
Beef, shank,				1	0.096	0.053		0.86	
hind, me-			1		2.72	1.50		24.4	
dium fat,		1			43.55	24.04		391	
A. P.	1		4.09	116.1	11.15	6.16		100	
Beef, shank,				1	0.209	0.115		1.87	
hind, me-			1		5.92	3.26		53.0	
dium fat,		1			94.80	52.16		849	
E. P.	1		1.88	53.4	11.17	6.15		100	
Beef, shoulder				1	0.164	0.044		1.05	
and clod,			1		4.65	1.25		29.8	
lean, A. P.		1			74.38	19.96		477	
	1		3.35	95.0	15.59	4.18		100	
Beef, shoulder				1	0.204	0.054		1.30	
and clod,			1		5.78	1.53		36.9	
lean, E. P.		1			92.52	24.49		591	
	1		2.71	76.8	15.67	4.15		100	
Beef, shoulder				1	0.164	0.098		1.55	
and clod,			1		4.65	2.78		43.9	
medium fat,		1			74.38	44.45		702	
A. P.	1		2.28	64.6	10.59	6.33		100	

TABLE XXIII.

FOOD VALUES OF FOOD MATERIALS USED CHIEFLY BY WEIGHT IN TERMS OF STANDARD UNITS.—*Continued.*

Food Material	No. P.	Weight lbs.	Weight oz.	Weight gms.	Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars
Beef, shoulder				1	0.196	0.113		1.80	
and clod,			1		5.55	3.20		51.1	
medium fat,		1			88.90	51.26		817	
E. P.	1		1.96	55.5	10.88	6.27		100	
Beef, sirloin				1	0.165	0.161		2.11	
steak, A. P.			1		4.68	4.56		59.8	
		1			74.84	73.03		957	
	1		1.67	47.4	7.82	7.63		100	
Beef, sirloin				1	0.189	0.185		2.42	
steak, E. P.			1		5.36	5.24		68.6	
		1			85.73	83.91		1098	
	1		1.46	41.3	7.87	7.64		100	
Beef, sweet-				1	0.168	0.121		1.76	
breads,			1		4.76	3.43		49.9	
A. P.		1			76.20	54.90		799	
	1		2.00	56.8	9.54	6.87		100	
Beef, tender-				1	0.162	0.244		2.84	
loin			1		4.59	6.92		80.6	
		1			73.48	110.69		1290	
	1		1.24	35.2	5.69	8.58		100	
Beef, tongue,				1	0.141	0.067		1.17	
fresh, A. P.			1		4.00	1.90		33.1	
		1			64.02	30.39		529	
	1		3.02	85.7	12.08	5.74		100	
Beef, tongue,				1	0.189	0.092		1.58	
fresh, E. P.			1		5.36	2.61		44.9	
		1			85.73	41.73		718	
	1		2.23	63.1	11.93	5.88		100	
Beef, tongue,				1	0.119	0.192		2.20	
pickled,			1		3.37	5.44		62.5	
A. P.		1			53.98	87.09		1000	
	1		1.60	45.4	5.40	8.71		100	
Beef, tongue,				1	0.128	0.205		2.36	
pickled,			1		3.63	5.81		66.8	
E. P.		1			58.06	92.98		1069	
	1		1.49	42.4	5.43	8.70		100	
Beef, top				1	0.133	0.423		4.34	
sirloin,			1		3.77	11.99		122.9	
A. P.		1			60.33	191.88		1968	
	1		0.81	23.1	3.06	9.75		100	

TABLE XXIII.

FOOD VALUES OF FOOD MATERIALS USED CHIEFLY BY WEIGHT IN TERMS OF STANDARD UNITS.—*Continued.*

Food Material	S. P.	Weight			Protein, Grams	Fat, Grams	Varbohydrate, Grams	Fuel Value, Calories	Cost, Dollars
		lbs.	oz.	gms.					
Beef, top				1	0.138	0.437		4.49	
sirloin,			1		3.91	12.39		127.1	
E. P		1			62.60	198.21		2034	
	1		0.79	22.3	3.08	9.74		100	
Blackberries,				1	0.008	0.021	0.564	2.48	
canned,			1		0.23	0.60	15.98	70.2	
A. P.		1			3.63	9.53	255.83	1124	
	1		1.43	40.4	0.32	0.85	22.77	100	
Blueberries,				1	0.006	0.006	0.128	0.59	
canned,			1		0.17	0.17	3.63	16.7	
A. P.		1			2.72	2.72	58.08	268	
	1		5.98	169.5	1.02	1.02	21.70	100	
Bluefish, fresh,				1	0.100	0.006		0.45	
entrails			1		2.84	0.17		12.9	
removed,		1			45.36	2.72		206	
A. P.	1		7.77	220.4	22.04	1.32		100	
Bluefish, fresh,				1	0.194	0.012		0.88	
entrails			1		5.49	0.34		25.1	
removed,		1			87.99	5.44		401	
E. P.	1		3.99	113.1	21.95	1.36		100	
Bouillon				1	0.022	0.001	0.002	0.11	
			1		0.62	0.03	0.06	2.98	
		1			9.98	0.45	0.91	47.6	
	1		33.6	952.0	20.95	0.95	1.90	100	
Brazil nuts,				1	0.086	0.337	0.035	3.52	
A. P.			1		2.43	9.55	0.99	99.7	
		1			39.01	152.86	15.88	1595	
	1		1.01	28.4	2.44	9.58	0.99	100	
Brazil nuts,				1	0.170	0.668	0.070	6.97	
E. P.			1		4.81	18.93	1.98	197.6	
		1			77.11	303.10	31.75	3162	
	1		0.51	14.3	2.44	9.58	1.00	100	
Bread, brown				1	0.054	0.018	0.471	2.26	
			1		1.53	0.51	13.35	64.1	
		1			24.48	8.16	213.60	1026	
	1		1.56	44.2	2.39	0.79	20.82	100	
Bread, corn				1	0.079	0.047	0.463	2.59	
			1		2.24	1.33	13.13	73.5	
		1			35.83	21.32	210.00	1175	
	1		1.36	38.6	3.05	1.81	17.87	100	

TABLE XXIII.

FOOD VALUES OF FOOD MATERIALS USED CHIEFLY BY WEIGHT IN TERMS OF STANDARD UNITS.—*Continued.*

Food Material	No.	Weight lbs.	Weight oz.	Weight gms.	Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars
Bread, gluten				1	0.093	0.014	0.498	2.49	
			1		2.64	0.40	14.12	70.6	
		1			42.18	6.35	225.90	1130	
	1		1.42	40.2	3.74	0.56	20.09	100	
Bread, graham				1	0.089	0.018	0.521	2.60	
			1		2.52	0.51	14.77	73.8	
		1			40.37	8.16	236.40	1180	
	1		1.35	38.4	3.42	0.69	20.03	100	
Bread, rye				1	0.090	0.006	0.532	2.54	
			1		2.55	0.17	15.08	72.1	
		1			40.82	2.72	241.30	1153	
	1		1.39	39.3	3.54	0.24	20.93	100	
Bread, rye and wheat				1	0.119	0.003	0.515	2.56	
			1		3.37	0.09	14.60	72.7	
		1			53.98	1.36	233.60	1163	
	1		1.38	39.0	4.64	0.12	20.09	100	
Bread, white, home made				1	0.091	0.016	0.533	2.64	
			1		2.58	0.45	15.11	74.8	
		1			41.27	7.26	241.75	1198	
	1		1.34	37.9	3.45	0.61	20.19	100	
Bread, white, cream				1	0.098	0.009	0.550	2.67	
			1		2.78	0.26	15.59	75.8	
		1			44.45	4.08	249.50	1212	
	1		1.32	37.4	3.67	0.34	20.58	100	
Bread, white, milk				1	0.096	0.014	0.511	2.55	
			1		2.72	0.40	14.49	72.4	
		1			43.55	6.35	231.75	1158	
	1		1.38	39.2	3.76	0.55	20.01	100	
Bread, white, Vienna				1	0.094	0.012	0.541	2.65	
			1		2.67	0.34	15.34	75.1	
		1			42.64	5.44	245.39	1201	
	1		1.33	37.9	3.55	0.45	20.43	100	
Bread, whole wheat				1	0.097	0.009	0.497	2.46	
			1		2.75	0.26	14.09	69.7	
		1			44.00	4.08	225.44	1115	
	1		1.44	40.7	3.95	0.37	20.23	100	
Buckwheat, flour				1	0.064	0.012	0.779	3.48	
			1		1.81	0.34	22.08	98.7	
		1			29.03	5.48	353.40	1577	
	1		1.01	28.7	1.84	0.34	22.39	100	

TABLE XXIII.

FOOD VALUES OF FOOD MATERIALS USED CHIEFLY BY WEIGHT IN TERMS OF STANDARD UNITS.—*Continued.*

Food Material	S. P.	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars
		lbs.	oz.	gms.					
Buckwheat, farina and groats				1	0.041	0.004	0.841	3.56	
			1		1.17	0.11	23.84	101.0	
		1			18.59	1.81	381.48	1617	
	1		0.99	28.1	1.15	0.11	23.60	100	
Butterfish, whole, A. P.				1	0.103	0.063		0.98	
			1		2.92	1.79		27.8	
		1			46.74	28.58		444	
	1		3.61	102.2	10.52	6.43		100	
Butterfish, whole, E. P.				1	0.180	0.110		1.71	
			1		5.10	3.12		48.5	
		1			81.64	49.90		776	
	1		2.06	58.5	10.53	6.43		100	
Butter milk,				1	0.030	0.005	0.048	0.36	
			1		0.85	0.14	1.36	10.1	
		1			13.61	2.27	21.82	162	
	1		9.86	279.6	8.59	1.40	13.42	100	
Butternuts, A. P.				1	0.038	0.083	0.005	0.92	
			1		1.08	2.35	0.14	26.1	
		1			17.24	37.65	2.27	417	
	1		3.84	108.8	4.14	9.03	0.54	100	
Butternuts, E. P.				1	0.279	0.612	0.035	6.76	
			1		7.91	17.35	0.99	191.8	
		1			126.55	277.60	15.86	3068	
	1		0.52	14.8	4.13	9.05	0.52	100	
Calf's-foot jelly, A. P.				1	0.043		0.174	0.87	
			1		1.22		4.93	24.6	
		1			19.50		78.92	394	
	1		4.06	115.2	4.95		20.05	100	
Catfish, A. P.				1	0.116	0.166		1.96	
			1		3.29	4.71		55.5	
		1			52.62	75.30		888	
	1		1.80	51.1	5.92	8.48		100	
Catfish, E. P.				1	0.144	0.206		2.43	
			1		4.08	5.84		68.9	
		1			65.32	93.44		1102	
	1		1.45	41.2	5.93	8.48		100	
Cereal coffee (infusion)				1	0.002		0.014	0.06	
			1		0.06		0.40	1.8	
		1			0.91		6.35	29	
	1		55.06	1561.0	3.13		21.88	100	

TABLE XXIII.

FOOD VALUES OF FOOD MATERIALS USED CHIEFLY BY WEIGHT IN TERMS OF STANDARD UNITS.—*Continued.*

Food Material	S. P.	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars
		lbs.	oz.	gms.					
Cerealine				1	0.096	0.011	0.783	3.62	
			1		2.72	0.31	22.20	102.5	
		1			43.55	4.99	35.52	1640	
	1		0.98	27.7	2.66	0.30	21.66	100	
Cheese, cheddar				1	0.277	0.368	0.041	4.58	
			1		7.85	10.43	1.16	130.0	
		1			125.64	166.90	18.60	2079	
	1		0.77	21.8	6.04	8.03	0.89	100	
Cheese, cottage, A. P.				1	0.209	0.010	0.043	1.10	
			1		5.92	0.28	1.21	31.1	
		1			94.80	4.54	19.51	498	
	1		3.21	91.1	19.04	0.91	3.92	100	
Cheese, Fromage de Brie, A. P.				1	0.159	0.210	0.014	2.58	
			1		4.51	5.95	0.40	73.2	
		1			72.12	95.25	6.35	1171	
	1		1.36	38.7	6.16	8.13	0.54	100	
Cheese, full cream, A. P.				1	0.259	0.337	0.024	4.17	
			1		7.34	9.55	0.68	118.0	
		1			117.48	152.84	10.88	1888	
	1		0.85	24.0	6.22	8.09	0.58	100	
Cheese, pineapple, A. P.				1	0.299	0.389	0.026	4.80	
			1		8.48	11.04	0.74	136.1	
		1			135.60	176.44	11.79	2178	
	1		0.73	20.8	6.23	8.10	0.54	100	
Cheese, Roquefort, A. P.				1	0.226	0.295	0.018	3.63	
			1		6.41	8.36	0.51	102.9	
		1			102.50	133.80	8.16	1647	
	1		0.97	27.5	6.22	8.13	0.49	100	
Cheese, Swiss, A. P.				1	0.276	0.349	0.013	4.30	
			1		7.82	9.89	0.37	121.8	
		1			125.18	158.30	5.90	1949	
	1		0.82	23.3	6.42	8.12	0.30	100	
Cherries, candied				1	0.005	0.002	0.862	3.48	
			1		0.14	0.04	24.43	98.6	
		1			2.22	0.68	390.80	1578	
	1		1.01	28.7	0.14	0.04	24.76	100	
Cherries, canned				1	0.011	0.001	0.211	0.90	
			1		0.31	0.03	5.98	25.4	
		1			4.99	0.45	95.62	407	
	1		3.93	111.5	1.23	0.11	23.52	100	

TABLE XXIII.

FOOD VALUES OF FOOD MATERIALS USED CHIEFLY BY WEIGHT IN TERMS OF STANDARD UNITS.—*Continued.*

Food Material	S. P.	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars
		lbs.	oz.	gms.					
Chestnuts,				1	0.081	0.053	0.564	3.06	
dried, A. P.			1		2.30	1.50	15.99	86.6	
		1			36.74	24.04	255.81	1386	
	1		1.15	32.7	2.65	1.73	18.45	100	
Chestnuts,				1	0.107	0.070	0.742	4.03	
dried, E. P.			1		3.03	1.98	21.04	114.2	
		1			48.54	31.75	336.58	1828	
	1		0.87	24.8	2.66	1.74	18.44	100	
Chestnuts,				1	0.052	0.045	0.354	2.03	
fresh, A. P.			1		1.47	1.27	10.04	57.5	
		1			23.58	20.41	160.57	920	
	1		1.74	49.3	2.56	2.21	17.25	100	
Chestnuts,				1	0.062	0.054	0.421	2.42	
fresh, E. P.			1		1.76	1.53	11.94	68.6	
		1			28.12	24.49	190.96	1097	
	1		1.46	41.3	2.56	2.23	17.39	100	
Chickens,				1	0.128	0.014		0.64	
broilers,			1		3.63	0.40		18.1	
A. P.		1			58.06	6.35		289	
	1		5.53	156.7	20.06	2.19		100	
Chickens,				1	0.215	0.025		1.09	
broilers,			1		6.10	0.71		30.8	
E. P.		1			97.60	11.36		492.3	
	1		3.27	92.6	19.91	2.32		100	
Chicken				1	0.247	0.014		1.11	
gizzard,			1		7.00	0.39		31.6	
A. P.		1			112.00	6.35		505	
	1		3.17	89.8	22.18	1.26		100	
Chicken				1	0.207	0.055		1.32	
heart,			1		5.87	1.56		37.5	
A. P.		1			93.88	24.95		600	
	1		2.67	75.6	15.65	4.16		100	
Chicken liver,				1	0.224	0.042	0.024	1.37	
A. P.			1		6.35	1.19	0.68	38.8	
		1			101.60	19.05	10.88	621	
	1		2.58	73.0	16.35	3.07	1.75	100	
Citron, dried,				1	0.005	0.015	0.781	3.28	
A. P.			1		0.14	0.42	22.14	93.0	
		1			2.27	6.80	354.30	1487	
	1		1.08	30.5	0.15	0.46	23.82	100	

TABLE XXIII.

FOOD VALUES OF FOOD MATERIALS USED CHIEFLY BY WEIGHT IN TERMS OF STANDARD UNITS. — *Continued.*

Food Material	S. P.	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars
		lbs.	oz.	gms.					
Clams, long, in shell, A. P.				1	0.050	0.006	0.011	0.30	
			1		1.42	0.17	0.31	8.4	
		1			22.68	2.72	4.99	136	
	1		11.87	335.6	16.78	2.01	3.69	100	
Clams, long, in shell, E. P.				1	0.086	0.010	0.020	0.51	
			1		2.44	0.28	0.57	14.6	
		1			39.01	4.53	9.07	231	
	1		6.86	194.6	16.74	1.95	3.89	100	
Clams, round, in shell, E. P.				1	0.065	0.004	0.042	0.46	
			1		1.84	0.11	1.19	13.1	
		1			29.48	1.81	19.05	210	
	1		7.61	215.5	14.01	0.86	9.05	100	
Cocoanut, prepared, A. P.				1	0.063	0.574	0.315	6.68	
			1		1.79	16.27	8.93	189.3	
		1			28.58	260.35	142.88	3028	
	1		0.53	15.0	0.94	8.59	4.69	100	
Cocoanuts, A. P.				1	0.029	0.259	0.143	3.02	
			1		0.82	7.34	4.05	85.6	
		1			13.15	117.48	64.86	1369	
	1		1.17	33.1	0.96	8.58	4.74	100	
Cocoanuts, E. P.				1	0.057	0.506	0.279	5.90	
			1		1.62	14.34	7.91	167.2	
		1			25.85	229.50	126.55	2675	
	1		0.60	16.9	0.97	8.58	4.73	100	
Cod, dressed, A. P.				1	0.111	0.002		0.46	
			1		3.15	0.06		13.1	
		1			50.35	0.91		210	
	1		7.63	216.4	24.02	0.42		100	
Cod, salt, A. P.				1	0.190	0.004		0.80	
			1		5.39	0.11		22.6	
		1			86.18	1.81		361	
	1		4.43	125.6	23.87	0.50		100	
Cod, salt, E. P.				1	0.254	0.003		1.04	
			1		7.20	0.09		29.6	
		1			115.20	1.36		473	
	1		3.38	95.8	24.33	0.29		100	
Cod, steak, A. P.				1	0.170	0.005		0.73	
			1		4.80	0.14		20.6	
		1			77.11	2.27		329	
	1		4.86	137.9	23.44	0.69		100	

TABLE XXIII.

FOOD VALUES OF FOOD MATERIALS USED CHIEFLY BY WEIGHT IN TERMS OF STANDARD UNITS.—*Continued.*

Food Material	No.	Weight lbs.	Weight oz.	Weight gms.	Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars
Consommé, canned				1	0.025		0.004	0.12	
			1		0.71		0.11	3.3	
		1			11.34		1.81	53	
	1		30.4	862.1	21.55		3.45	100	
Corn flour				1	0.071	0.013	0.784	3.54	
			1		2.01	0.37	22.23	100.3	
		1			32.25	5.89	355.62	1604	
	1		0.99	28.3	2.01	0.37	22.17	100	
Cottolene				1		1.000		9.00	
			1			28.35		255.2	
		1				453.60		4082	
	1		0.39	11.1		11.11		100	
Cracker-meal, A. P.				1	0.109	0.060	0.729	3.89	
			1		3.09	1.70	20.67	110.3	
		1			49.44	27.23	330.67	1765	
	1		0.91	25.7	2.80	1.54	18.73	100	
Crackers, Boston, A. P.				1	0.110	0.085	0.711	4.05	
			1		3.12	2.41	20.16	114.8	
		1			49.90	38.56	322.50	1837	
	1		0.87	24.7	2.72	2.10	19.04	100	
Crackers, butter, A. P.				1	0.096	0.101	0.716	4.16	
			1		2.72	2.86	20.30	117.8	
		1			43.54	45.81	324.77	1885	
	1		0.85	24.1	2.31	2.43	17.23	100	
Crackers, cream, A. P.				1	0.097	0.121	0.697	4.27	
			1		2.75	3.43	19.76	120.9	
		1			44.00	54.88	316.18	1935	
	1		0.83	23.5	2.28	2.84	16.34	100	
Crackers, water, A. P.				1	0.117	0.050	0.757	3.95	
			1		3.32	1.41	21.46	111.9	
		1			53.07	22.68	343.37	1790	
	1		0.89	25.3	2.96	1.26	19.18	100	
Cream, common, (18.5%)				1	0.025	0.185	0.045	1.95	
			1		0.71	5.24	1.27	55.0	
		1			11.34	83.85	20.41	881	
	1		1.81	51.4	1.28	9.50	2.31	100	
Cucumber pickles, A. P.				1	0.005	0.003	0.027	0.16	
			1		0.14	0.09	0.77	4.4	
		1			2.27	1.36	12.25	70	
	1		22.76	645.2	3.23	1.94	17.42	100	

TABLE XXIII.

FOOD VALUES OF FOOD MATERIALS USED CHIEFLY BY WEIGHT IN TERMS OF STANDARD UNITS.—*Continued.*

Food Material	S. P.	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars
		lbs.	oz.	gms.					
Doughnuts,				1	0.067	0.210	0.531	4.28	
A. P.			1		1.89	5.95	15.05	129.4	
		1			30.39	95.25	240.83	1942	
	1		0.82	23.4	1.56	4.91	12.40	100	
Eels, dressed,				1	0.148	0.072		1.24	
A. P.			1		4.18	2.04		35.2	
		1			67.13	32.66		562	
	1		2.85	80.6	11.94	5.81		100	
Eels, dressed,				1	0.186	0.091		1.56	
E. P.			1		5.27	2.58		44.3	
		1			84.36	41.27		709	
	1		2.26	64.0	11.90	5.82		100	
Egg plant,				1	0.012	0.003	0.051	0.28	
E. P.			1		0.34	0.09	1.44	7.9	
		1			5.44	1.36	23.11	127	
	1		12.64	358.4	4.30	1.08	18.28	100	
Fig bars or				1	0.046	0.066	0.698	3.57	
biscuits,			1		1.30	1.87	19.79	101.2	
A. P.		1			20.86	29.92	316.61	1619	
	1		0.99	28.0	1.29	1.85	19.55	100	
Filberts,				1	0.075	0.313	0.062	3.37	
A. P.			1		2.13	8.87	1.76	95.4	
		1			34.04	141.98	28.12	1526	
	1		1.05	29.7	2.23	9.30	1.84	100	
Filberts,				1	0.156	0.653	0.130	7.02	
E. P.			1		4.42	18.51	3.69	199.1	
		1			70.76	296.20	58.97	3185	
	1		0.50	14.2	2.22	9.30	1.85	100	
Flounder,				1	0.064	0.003		0.28	
entrails			1		1.81	0.09		8.0	
removed,		1			29.03	1.36		128	
A. P.	1		12.45	353.4	22.61	1.06		100	
Fowl, A. P.				1	0.137	0.123		1.66	
			1		3.88	3.49		46.9	
		1			62.14	55.79		751	
	1		2.13	60.4	8.27	7.43		100	
Fowl, E. P.				1	0.193	0.163		2.24	
			1		5.47	4.60		63.5	
		1			87.54	73.94		1016	
	1		1.58	44.7	8.62	7.28		100	

TABLE XXIII.

FOOD VALUES OF FOOD MATERIALS USED CHIEFLY BY WEIGHT IN TERMS OF STANDARD UNITS.—*Continued.*

Food Material	S. P.	Weight			Protein. Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars
		lbs.	oz.	gms.					
Frog's legs,				1	0.105	0.001		0.43	
A. P.			1		2.98	0.03		12.2	
		1			47.63	0.45		195	
	1		8.12	233.1	24.48	0.23		100	
Frog's legs,				1	0.155	0.002		0.64	
E. P.			1		4.39	0.06		18.1	
		1			70.30	0.91		289	
	1		5.53	156.7	24.30	0.31		100	
Ginger,				1	0.003	0.002	0.861	3.48	
crystallized			1		0.10	0.05	24.42	98.5	
		1			1.54	0.82	390.60	1576	
	1		1.02	28.8	0.10	0.05	24.78	100	
Gingersnaps				1	0.065	0.086	0.760	4.07	
			1		1.84	2.44	21.55	115.5	
		1			29.48	39.00	344.65	1848	
	1		0.86	21.5	1.60	2.11	18.60	100	
Gluten flour				1	0.142	0.018	0.711	3.57	
			1		4.03	0.51	20.16	101.3	
		1			64.41	8.16	322.50	1621	
	1		0.99	28.0	3.97	0.50	19.90	100	
Goose, young,				1	0.134	0.298		3.22	
A. P.			1		3.80	8.45		91.2	
		1			60.78	135.18		1460	
	1		1.10	31.1	4.16	9.26		100	
Goose, young,				1	0.163	0.362		3.91	
E. P.			1		4.62	10.26		110.8	
		1			73.93	164.20		1774	
	1		0.90	25.6	4.17	9.26		100	
Greens,				1	0.024	0.010	0.106	0.61	
dandelion,			1		0.68	0.28	3.00	17.3	
A. P.		1			10.88	4.54	48.08	277	
	1		5.78	163.9	3.93	1.64	17.38	100	
Grape juice				1			0.250	1.00	
			1				7.09	28.4	
		1					113.40		
	1		3.53	100			25.00	100	
Haddock,				1	0.084	0.002		0.35	
entrails			1		2.37	0.06		10.0	
removed,		1			38.10	0.91		161	
A. P.	1		9.96	282.5	23.73	0.57		100	

TABLE XXIII.

FOOD VALUES OF FOOD MATERIALS USED CHIEFLY BY WEIGHT IN TERMS OF STANDARD UNITS.—*Continued.*

Food Material	S. P.	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars
		lbs.	oz.	gms.					
Haddock,				1	0.172	0.003		0.72	
entrails			1		4.88	0.09		20.3	
removed,		1			78.02	1.36		324	
E. P.	1		4.94	139.9	24.06	0.42		100	
Haddock,				1	0.158	0.001		0.64	
smoked,			1		4.48	0.03		18.2	
A. P.		1			71.67	0.45		291	
	1		5.50	156.0	24.65	0.16		100	
Haddock,				1	0.233	0.002		0.95	
smoked,			1		6.61	0.06		26.9	
E. P.		1			105.69	0.91		431	
	1		3.71	105.3	24.53	0.21		100	
Halibut,				1	0.193	0.140		2.03	
smoked,			1		5.47	3.97		57.6	
A. P.		1			87.54	63.50		922	
	1		1.74	49.2	9.50	6.89		100	
Halibut,				1	0.207	0.150		2.18	
smoked,			1		5.87	4.25		61.7	
E. P.		1			93.89	68.04		988	
	1		1.62	45.9	9.50	6.89		100	
Halibut,				1	0.153	0.044		1.01	
steak, A. P.			1		4.33	1.25		28.6	
		1			69.40	19.96		457	
	1		3.49	99.2	15.18	4.37		100	
Halibut,				1	0.186	0.052		1.21	
steak, E. P.			1		5.27	1.47		34.4	
		1			84.36	23.58		550	
	1		2.93	82.5	15.34	4.29		100	
Ham, bone-				1	0.143	0.275		3.05	
less, A. P.			1		4.05	7.80		86.4	
		1			64.84	124.74		1382	
	1		1.16	32.8	4.69	9.03		100	
Ham, deviled				1	0.190	0.341		3.83	
			1		5.39	9.67		108.5	
		1			86.18	154.68		1737	
	1		0.92	26.1	4.96	8.91		100	
Ham, fresh,				1	0.248	0.142		2.27	
lean, A. P.			1		7.03	4.03		64.4	
		1			112.50	64.41		1030	
	1		1.55	44.1	10.93	6.26		100	

TABLE XXIII.

FOOD VALUES OF FOOD MATERIALS USED CHIEFLY BY WEIGHT IN TERMS OF STANDARD UNITS.—*Continued.*

Food Material	S. P.	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars
		lbs.	oz.	gms.					
Ham, fresh,				1	0.135	0.259		2.87	
medium fat,			1		3.83	7.34		81.4	
A. P.		1			60.33	117.48		1302	
	1		1.23	34.8	4.70	9.02		100	
Ham, fresh,				1	0.153	0.289		3.21	
medium fat,			1		4.34	8.19		91.1	
E. P.		1			69.40	131.10		1457	
	1		1.10	31.1	4.76	9.00		100	
Ham,				1	0.175	0.185		2.37	
smoked,			1		4.96	5.26		67.05	
lean, A. P.		1			79.38	83.92		1073	
	1		1.49	42.3	7.40	7.82		100	
Ham,				1	0.198	0.208		2.66	
smoked,			1		5.61	5.90		75.5	
lean, E. P.		1			89.82	94.35		1207	
	1		1.32	37.5	7.43	7.81		100	
Ham,				1	0.142	0.334		3.57	
smoked,			1		4.03	9.47		101.3	
medium fat,		1			64.41	151.50		1621	
A. P.	1		0.98	28.0	3.97	9.35		100	
Ham,				1	0.163	0.388		4.14	
smoked,			1		4.62	11.00		117.5	
medium fat,		1			73.94	175.80		1880	
E. P.	1		0.85	24.1	3.93	9.36		100	
Head cheese,				1	0.189	0.240		2.92	
A. P.			1		5.36	6.84		82.7	
		1			85.73	108.87		1323	
	1		1.21	34.3	6.48	8.23		100	
Head cheese,				1	0.195	0.338		3.82	
E. P.			1		5.53	9.58		108.3	
		1			88.45	153.30		1734	
	1		0.92	26.2	5.10	8.84		100	
Herring,				1	0.205	0.088		1.61	
smoked,			1		5.81	2.49		45.7	
A. P.		1			92.98	39.95		731	
	1		2.19	62.0	12.72	5.46		100	
Herring,				1	0.369	0.158		2.90	
smoked,			1		10.46	4.48		82.2	
E. P.		1			167.37	71.67		1315	
	1		1.22	34.5	12.73	5.45		100	

TABLE XXIII.

FOOD VALUES OF FOOD MATERIALS USED CHIEFLY BY WEIGHT IN TERMS OF STANDARD UNITS.—*Continued.*

Food Material	S. P.	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars
		lbs.	oz.	gms.					
Herring,				1	0.112	0.039		0.80	
whole,			1		3.18	1.11		22.6	
A. P.		1			50.80	17.69		362	
	1		4.29	125.1	14.02	4.88		100	
Herring,				1	0.195	0.071		1.42	
whole,			1		5.53	2.01		40.2	
E. P.		1			88.45	32.20		644	
	1		2.49	70.5	13.74	5.00		100	
Hickory nuts,				1	0.058	0.255	0.043	2.70	
A. P.			1		1.64	7.23	1.22	76.5	
		1			26.31	115.67	19.51	1224	
	1		1.31	37.1	2.15	9.44	1.59	100	
Hickory nuts,				1	0.154	0.674	0.114	7.14	
E. P.			1		4.36	19.11	3.23	202.4	
		1			69.86	305.72	51.70	3238	
	1		0.49	14.0	2.16	9.44	1.59	100	
Honey, A. P.				1	0.004		0.812	3.26	
			1		0.11		23.02	92.5	
		1			1.81		368.30	1480	
	1		1.08	30.6	0.12		24.88	100	
Koumiss,				1	0.028	0.021	0.054	0.52	
A. P.			1		0.79	0.60	1.53	14.7	
		1			12.70	9.53	24.49	235	
	1		6.82	193.4	5.42	4.06	10.44	100	
Lamb,				1	0.154	0.191		2.34	
breast,			1		4.37	5.41		66.6	
A. P.		1			69.85	86.63		1057	
	1		1.51	42.8	6.59	8.18		100	
Lamb,				1	0.191	0.236		2.89	
breast,			1		5.41	6.69		81.8	
E. P.		1			86.63	107.04		1310	
	1		1.22	34.6	6.61	8.17		100	
Lamb, leg,				1	0.159	0.136		1.86	
hind,			1		4.51	3.86		52.7	
medium fat,		1			72.12	61.69		844	
A. P.	1		1.90	53.8	8.55	7.31		100	
Lamb, leg,				1	0.192	0.165		2.25	
hind,			1		5.44	4.68		63.9	
medium fat,		1			87.08	74.84		1022	
E. P.	1		1.57	44.4	8.52	7.32		100	

TABLE XXIII.

FOOD VALUES OF FOOD MATERIALS USED CHIEFLY BY WEIGHT IN TERMS OF STANDARD UNITS.—*Continued.*

Food Material	Sp.	Weight lbs.	Weight oz.	Weight gms.	Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars
Lamb, loin,				1	0.160	0.241		2.81	
A. P.			1		4.54	6.83		79.6	
		1			72.58	109.30		1274	
	1		1.26	35.6	5.70	8.58		100	
Lamb, loin,				1	0.187	0.283		3.30	
E. P.			1		5.30	8.02		93.42	
		1			84.82	128.37		1495	
	1		1.06	30.4	5.67	8.59		100	
Lamb, neck,				1	0.146	0.204		2.42	
A. P.			1		4.14	5.78		68.6	
		1			66.22	92.53		1098	
	1		1.46	41.3	6.03	8.43		100	
Lamb, neck,				1	0.177	0.248		2.94	
E. P.			1		5.02	7.03		83.3	
		1			80.28	112.49		1334	
	1		1.20	34.0	6.02	8.43		100	
Lamb,				1	0.144	0.236		2.70	
shoulder,			1		4.08	6.69		76.5	
A. P.		1			65.31	107.05		1225	
	1		1.31	37.0	5.33	8.74		100	
Lamb,				1	0.181	0.297		3.40	
shoulder,			1		5.13	8.42		112.5	
E. P.		1			82.10	134.70		1541	
	1		1.04	29.4	5.33	8.74		100	
Lamb,				1	0.135	0.173		2.10	
tongue,			1		3.83	4.91		59.4	
canned,		1			61.24	78.47		951	
A. P.	1		1.68	47.7	6.44	8.25		100	
Lemons,				1	0.007	0.005	0.059	0.31	
A. P.			1		0.20	0.14	1.67	8.8	
		1			3.18	2.27	26.76	140	
	1		11.41	323.6	2.27	1.62	19.09	100	
Lemons,				1	0.01	0.007	0.085	0.44	
E. P.			1		0.28	0.20	2.41	12.6	
		1			4.54	3.18	38.56	201	
	1		7.96	225.7	2.26	1.58	19.24	100	
Lobster,				1	0.181	0.011	0.005	0.84	
canned,			1		5.13	0.31	0.14	23.9	
A. P.		1			82.10	4.99	2.27	382	
	1		4.30	118.6	21.47	1.31	0.59	100	

TABLE XXIII.

FOOD VALUES OF FOOD MATERIALS USED CHIEFLY BY WEIGHT IN TERMS OF STANDARD UNITS.—*Continued.*

Food Material	S. P.	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars
		lbs.	oz.	gms.					
Lobster,				1	0.059	0.007	0.002	0.31	
whole,			1		1.67	0.20	0.06	8.70	
A. P.		1			26.76	3.18	0.91	139	
	1		11.48	325.7	19.22	2.29	0.65	100	
Lobster,				1	0.164	0.018	0.004	0.83	
whole,			1		4.65	0.51	0.11	23.6	
E. P.		1			74.38	8.16	1.81	378	
	1		4.23	119.9	19.66	2.16	0.48	100	
Macaroons,				1	0.065	0.152	0.652	4.24	
A. P.			1		1.84	4.31	18.48	120.1	
		1			29.48	68.95	295.75	1921	
	1		0.83	23.6	1.54	3.59	15.39	100	
Mackerel,				1	0.102	0.042		0.79	
fresh,			1		2.89	1.19		22.3	
whole,		1			46.27	19.05		357	
A. P.	1		4.49	127.2	12.98	5.34		100	
Mackerel,				1	0.187	0.071		1.39	
fresh,			1		5.30	2.01		39.3	
whole,		1			84.82	32.20		629	
E. P.	1		2.54	72.1	13.48	5.12		100	
Mackerel,				1	0.116	0.035		0.78	
fresh,			1		3.29	0.99		22.1	
entrails re-		1			52.62	15.87		353	
moved, A.P.	1		4.51	128.4	14.89	4.49		100	
Mackerel,				1	0.196	0.087		1.57	
salt,			1		5.56	2.47		44.4	
canned,		1			88.89	39.47		711	
A. P.	1		2.25	63.8	12.51	5.55		100	
Mackerel,				1	0.139	0.212		2.46	
salt,			1		3.94	6.01		69.9	
dressed,		1			63.05	96.16		1118	
A. P.	1		1.43	40.6	5.64	8.60		100	
Mackerel,				1	0.173	0.264		3.07	
salt,			1		4.91	7.48		87.0	
dressed,		1			78.47	119.74		1392	
E. P.	1		1.15	32.6	5.64	8.61		100	
Mushrooms,				1	0.035	0.004	0.068	0.45	
A. P.			1		0.99	0.11	1.93	12.7	
		1			15.88	1.81	30.85	203	
	1		7.86	223.2	7.81	0.89	15.18	100	

TABLE XXIII.

FOOD VALUES OF FOOD MATERIALS USED CHIEFLY BY WEIGHT IN TERMS OF STANDARD UNITS.—*Continued.*

Food Material	S. P.	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars
		lbs.	oz.	gms.					
Mutton,				1	0.117	0.300		3.17	
chuck,			1		3.32	8.50		89.8	
A. P.		1			53.07	136.08		1437	
	1		1.11	31.6	3.69	9.47		100	
Mutton,				1	0.146	0.368		3.90	
chuck,			1		4.14	10.43		110.4	
E. P.		1			66.22	166.80		1767	
	1		0.91	25.7	3.75	9.45		100	
Mutton,				1	0.138	0.369		3.87	
flank,			1		3.91	10.46		109.8	
medium fat,		1			62.60	167.38		1757	
A. P.	1		0.91	25.8	3.56	9.53		100	
Mutton,				1	0.152	0.383		4.06	
flank,			1		4.31	10.86		115.0	
medium fat,		1			68.94	173.70		1839	
E. P.	1		0.87	24.7	3.75	9.44		100	
Mutton, leg,				1	0.165	0.103		1.59	
hind, lean,			1		4.68	2.92		45.0	
A. P.		1			74.84	46.72		720	
	1		2.22	63.0	10.40	6.49		100	
Mutton, leg,				1	0.198	0.124		1.91	
hind, lean,			1		5.62	3.52		54.1	
E. P.		1			89.82	56.24		865	
	1		1.85	52.4	10.38	6.50		100	
Mutton, leg,				1	0.151	0.147		1.93	
hind,			1		4.28	4.17		54.6	
medium fat,		1			68.50	66.68		874	
A. P.	1		1.83	51.9	7.84	7.63		100	
Mutton, leg,				1	0.185	0.180		2.36	
hind,			1		5.24	5.10		66.9	
medium fat,		1			83.91	81.64		1070	
E. P.	1		1.50	42.4	7.84	7.63		100	
Mutton, loin,				1	0.237	0.185		2.61	
free fat			1		6.72	5.25		74.1	
removed		1			107.50	84.12		1185	
	1		1.35	38.3	9.07	7.08		100	
Mutton, loin,				1	0.135	0.283		3.09	
medium fat,			1		3.83	8.02		87.5	
A. P.		1			61.24	128.36		1400	
	1		1.14	32.4	4.37	9.17		100	

TABLE XXIII.

FOOD VALUES OF FOOD MATERIALS USED CHIEFLY BY WEIGHT IN TERMS OF STANDARD UNITS.—*Continued.*

Food Material	S. P.	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars
		lbs.	oz.	gms.					
Mutton, loin,				1	0.160	0.331		3.62	
medium fat,			1		4.55	9.38		102.6	
E. P.		1			72.58	150.14		1642	
	1		0.97	27.6	4.42	9.15		100	
Mutton, neck,				1	0.123	0.179		2.10	
medium fat,			1		3.49	5.07		59.6	
A. P.		1			55.80	81.20		954	
	1		1.68	47.6	5.85	8.51		100	
Mutton, neck,				1	0.169	0.246		2.89	
medium fat,			1		4.79	6.97		81.9	
E. P.		1			76.66	111.58		1311	
	1		1.22	34.6	5.85	8.51		100	
Mutton,				1	0.137	0.155		1.94	
shoulder,			1		3.88	4.39		55.1	
medium fat,		1			62.14	70.31		881	
A. P.	1		1.82	51.5	7.05	7.96		100	
Mutton,				1	0.177	0.199		2.50	
shoulder,			1		5.02	5.64		70.8	
medium fat,		1			80.28	90.26		1133	
E. P.	1		1.41	40.0	7.08	7.96		100	
Nectarines,				1	0.006		0.148	0.62	
A. P.			1		0.17		4.20	17.5	
		1			2.72		67.12	279	
	1		5.71	162.3	0.97		24.02	100	
Nectarines,				1	0.006		0.159	0.66	
E. P.			1		0.17		4.51	18.7	
		1			2.72		72.12	299	
	1		5.34	151.5	0.91		24.09	100	
Oatmeal				1	0.161	0.072	0.675	3.99	
			1		4.56	2.04	19.13	113.2	
		1			73.02	32.65	306.18	1810	
	1		0.88	25.1	4.03	1.80	16.90	100	
Okra, A. P.				1	0.014	0.002	0.065	0.33	
			1		0.40	0.06	1.84	9.5	
		1			6.35	0.91	29.48	152	
	1		10.54	299.4	4.19	0.60	19.46	100	
Oleomargarine, A. P.				1	0.012	0.830		7.52	
			1		0.34	23.53		213.1	
		1			5.44	376.50		3410	
	1		0.47	13.3	0.16	11.04		100	

TABLE XXIII.

FOOD VALUES OF FOOD MATERIALS USED CHIEFLY BY WEIGHT IN TERMS OF STANDARD UNITS.—*Continued.*

Food Material	S. P.	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars
		lbs.	oz.	gms.					
Olives, ripe,				1	0.014	0.210	0.035	2.09	
A. P.			1		0.40	5.95	0.99	59.1	
		1			6.35	95.25	15.38	946	
	1		1.69	47.9	0.67	10.02	1.68	100	
Olives, ripe,				1	0.017	0.250	0.043	2.49	
E. P.			1		0.48	7.09	1.22	70.6	
		1			7.71	113.40	19.50	1129	
	1		1.42	40.2	0.68	10.04	1.73	100	
Orange juice				1			0.108	0.43	
			1				3.06	12.25	
		1					48.98	196	
	1		8.17	231.5			25.00	100	
Oysters,				1	0.088	0.024	0.039	0.72	
canned,			1		2.50	0.68	1.11	20.5	
A. P.		1			39.92	10.89	15.38	328	
	1		4.87	138.1	12.16	3.32	5.39	100	
Pecans,				1	0.051	0.379	0.082	3.94	
unpolished,			1		1.45	10.74	2.32	111.8	
A. P.		1			23.13	171.90	37.19	1788	
	1		0.89	25.4	1.29	9.61	2.08	100	
Pecans,				1	0.096	0.705	0.153	7.34	
unpolished,			1		2.72	19.99	4.33	208.1	
E. P.		1			43.55	319.79	69.40	3330	
	1		0.48	13.6	1.31	9.62	2.08	100	
Perch, yellow				1	0.128	0.007		0.58	
dressed,			1		3.63	0.20		16.3	
A. P.		1			58.06	3.18		261	
	1		6.32	173.9	22.26	1.22		100	
Pickerel, pike,				1	0.107	0.003		0.46	
entrails			1		3.03	0.09		12.9	
removed,		1			48.54	1.36		206	
A. P.	1		7.75	219.8	23.52	0.66		100	
Pigs' feet,				1	0.102	0.093		1.25	
pickled,			1		2.90	2.64		35.3	
A. P.		1			46.27	42.18		565	
	1		2.83	80.3	8.20	7.50		100	
Pigs' feet,				1	0.163	0.148		1.98	
pickled,			1		4.60	4.20		56.2	
E. P.		1			73.94	67.13		900	
	1		1.78	50.9	8.20	7.50		100	

TABLE XXIII.

FOOD VALUES OF FOOD MATERIALS USED CHIEFLY BY WEIGHT IN TERMS OF STANDARD UNITS.—*Continued.*

Food Material	S. P.	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars
		lbs.	oz.	gms.					
Pineapple				1			0.165	0.66	
juice			1				4.68	18.7	
		1					74.84	299	
	1		5.34	151.5			25.00	100	
Pine nuts,				1	0.339	0.494	0.069	6.08	
pignolias,			1		9.61	14.00	1.96	172.3	
E. P.		1			153.77	224.10	31.30	2757	
	1		0.58	16.5	5.58	8.13	1.14	100	
Pistachios,				1	0.223	0.540	0.163	6.40	
shelled,			1		6.32	15.31	4.62	181.6	
E. P.		1			101.14	244.93	73.94	2905	
	1		0.55	15.6	3.48	8.43	2.55	100	
Pop corn				1	0.107	0.050	0.787	4.03	
			1		3.03	1.42	22.31	114.1	
		1			48.54	22.68	356.98	1826	
	1		0.87	24.8	2.66	1.24	19.55	100	
Porgy, whole,				1	0.074	0.021		0.49	
A. P.			1		2.10	0.60		13.8	
		1			33.57	9.52		220	
	1		7.27	206.2	15.26	4.33		100	
Porgy, whole,				1	0.186	0.051		1.20	
E. P.			1		5.27	1.45		34.1	
		1			84.36	23.13		546	
	1		2.93	83.1	15.46	4.24		100	
Pork, loin				1	0.155	0.145		1.93	
chops, lean,			1		4.39	4.11		54.6	
A. P.		1			70.31	65.76		873	
	1		1.83	51.9	8.05	7.53		100	
Pork, loin				1	0.203	0.190		2.52	
chops, lean,			1		5.76	5.39		71.5	
E. P.		1			92.08	86.18		1144	
	1		1.40	39.7	8.05	7.53		100	
Pork, loin				1	0.134	0.242		2.71	
chops,			1		3.80	6.86		76.9	
medium fat,		1			60.78	109.78		1231	
A. P.	1		1.30	36.9	4.94	8.92		100	
Pork, loin				1	0.166	0.301		3.37	
chops,			1		4.71	8.53		95.6	
medium fat,		1			75.30	136.53		1530	
E. P.	1		1.04	29.7	4.92	8.92		100	

TABLE XXIII.

FOOD VALUES OF FOOD MATERIALS USED CHIEFLY BY WEIGHT IN TERMS OF STANDARD UNITS.—*Continued.*

Food Material	No.	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars
		lbs.	oz.	gms.					
Pork, salt,				1	0.019	0.862		7.83	
clear fat,			1		0.54	24.44		222.1	
A. P.		1			8.62	391.00		3555	
	1		0.45	12.8	0.24	11.00		100	
Pork, side not				1	0.080	0.490		4.73	
including			1		2.27	13.89		134.1	
lard and		1			36.28	222.25		2145	
kidney, A.P.	1		0.74	21.1	1.69	10.36		100	
Pork, side not				1	0.091	0.553		5.34	
including			1		2.58	15.68		151.4	
lard and		1			41.28	250.82		2423	
kidney, E.P.	1		0.66	18.7	1.70	10.34		100	
Pork, shoulder smoked,				1	0.130	0.266		2.91	
			1		3.69	7.54		82.6	
medium fat,		1			58.98	120.66		1322	
A. P.	1		1.21	34.3	4.46	9.13		100	
Pork, shoulder smoked,				1	0.159	0.325		3.56	
			1		4.51	9.21		100.9	
medium fat,		1			72.12	147.42		1615	
E. P.	1		0.99	28.1	4.47	9.13		100	
Pork, tenderloin, A. P.				1	0.189	0.130		1.93	
			1		5.36	3.69		54.6	
		1			85.74	58.97		874	
	1		1.83	51.9	9.81	6.75		100	
Pumpkins,				1	0.005	0.001	0.026	0.13	
A. P.			1		0.14	0.03	0.74	3.8	
		1			2.27	0.45	11.79	60	
	1		26.52	751.9	3.76	0.75	19.55	100	
Pumpkins,				1	0.010	0.001	0.052	0.26	
E. P.			1		0.28	0.03	1.47	7.3	
		1			4.54	0.45	23.59	117	
	1		13.72	389.1	3.89	0.39	20.23	100	
Raspberry juice				1			0.094	0.38	
			1				2.66	10.7	
		1					42.64	171	
	1		9.38	266			25.00	100	
Rice flour				1	0.086	0.061	0.680	3.61	
			1		2.43	1.72	19.28	102.4	
		1			39.01	27.67	308.45	1639	
	1		0.97	27.6	2.38	1.68	18.82	100	

TABLE XXIII.

FOOD VALUES OF FOOD MATERIALS USED CHIEFLY BY WEIGHT IN TERMS OF STANDARD UNITS.—*Continued.*

Food Material	S. P.	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars
		lbs.	oz.	gms.					
Rolls, French				1	0.085	0.025	0.557	2.79	
			1		2.41	0.71	15.79	79.2	
		1			38.56	11.34	252.55	1267	
	1		1.26	35.8	3.04	0.90	19.94	100	
Rolls, Vienna				1	0.085	0.022	0.565	2.80	
			1		2.41	0.62	16.03	79.4	
		1			38.56	9.98	256.28	1269	
	1		1.26	35.7	3.04	0.79	20.19	100	
Rolls, water				1	0.090	0.030	0.542	2.80	
			1		2.55	0.85	15.37	79.3	
		1			40.82	13.61	245.82	1269	
	1		1.26	35.7	3.22	1.07	19.37	100	
Rutabagas,				1	0.009	0.001	0.060	0.29	
A. P.			1		0.26	0.03	1.70	8.1	
		1			4.08	0.45	27.22	129	
	1		12.37	350.9	3.16	0.35	21.06	100	
Rye flour				1	0.068	0.009	0.787	3.50	
			1		1.93	0.26	22.31	99.3	
		1			30.88	4.08	357.00	1588	
	1		1.01	28.5	1.94	0.26	22.48	100	
Salmon,				1	0.153	0.089		1.41	
whole,			1		4.34	2.52		40.1	
fresh, A. P.		1			69.40	40.37		641	
	1		2.50	70.8	10.83	6.30		100	
Salmon,				1	0.220	0.128		2.03	
whole,			1		6.24	3.63		57.6	
fresh, E. P.		1			99.80	58.06		922	
	1		1.75	49.2	10.83	6.30		100	
Sausage,				1	0.182	0.197		2.50	
bologna,			1		5.16	5.59		70.9	
A. P.		1			82.56	89.36		1134	
	1		1.41	40.0	7.28	7.88		100	
Sausage,				1	0.187	0.176	0.003	2.34	
bologna,			1		5.30	4.99	0.09	61.5	
E. P.		1			84.82	79.83	1.36	1063	
	1		1.50	42.7	7.98	7.51	0.13	100	
Sausage,				1	0.196	0.186	0.011	2.50	
frankfort,			1		5.56	5.27	0.31	70.9	
A. P.		1			88.90	84.37	4.99	1134	
	1		1.12	40.0	7.83	7.43	0.44	100	

TABLE XXIII.

FOOD VALUES OF FOOD MATERIALS USED CHIEFLY BY WEIGHT IN TERMS OF STANDARD UNITS.—*Continued.*

Food Material	No.	Weight lbs.	Weight oz.	Weight gms.	Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars
Sausage meat,				1	0.174	0.325		3.62	
pork, A. P.			1		4.93	9.21		102.4	
		1			78.93	147.41		1642	
	1		0.98	27.7	4.82	9.00		100	
Sausage,				1	0.130	0.440	0.011	4.52	
pork, A. P.			1		3.69	12.47	0.31	128.3	
		1			58.97	199.60	4.99	2052	
	1		0.78	22.1	2.86	9.73	0.24	100	
Sausage,				1	0.245	0.421		4.77	
summer,			1		6.95	11.94		135.2	
A. P.		1			111.13	190.98		2163	
	1		0.74	21.0	5.14	8.83		100	
Sausage,				1	0.260	0.445		5.05	
summer,			1		7.37	12.62		143.0	
E. P.		1			117.93	201.86		2289	
	1		0.70	19.8	5.15	8.82		100	
Scallops,				1	0.148	0.001	0.034	0.74	
A. P.			1		4.20	0.03	0.96	20.9	
		1			67.13	0.45	15.42	334	
	1		4.79	135.7	20.08	0.14	4.61	100	
Shad, whole,				1	0.094	0.048		0.81	
fresh, A. P.			1		2.67	1.36		22.9	
		1			42.64	21.77		367	
	1		4.37	123.8	11.63	5.94		100	
Shad, whole,				1	0.188	0.095		1.61	
fresh, E. P.			1		5.33	2.69		45.6	
		1			85.12	43.04		728	
	1		2.19	62.2	11.70	5.91		100	
Shad roe,				1	0.209	0.038	0.026	1.28	
fresh, A. P.			1		5.93	1.08	0.74	36.3	
		1			94.72	17.12	11.79	581	
	1		2.75	78.0	16.30	2.96	2.03	100	
Shrimp,				1	0.254	0.010	0.002	1.11	
canned,			1		7.20	0.28	0.06	31.5	
A. P.		1			115.20	4.53	1.81	504	
	1		3.17	89.8	22.71	0.90	0.18	100	
Smelt, whole,				1	0.101	0.010		0.49	
A. P.			1		2.86	0.28		14.0	
		1			45.83	4.53		224	
	1		7.14	202.4	20.44	2.02		100	

TABLE XXIII.

FOOD VALUES OF FOOD MATERIALS USED CHIEFLY BY WEIGHT IN TERMS OF STANDARD UNITS.—*Continued.*

Food Material	S. P.	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars
		lbs.	oz.	gms.					
Smelt, whole,				1	0.176	0.018		0.87	
E. P.			1		4.99	0.51		24.6	
		1			79.63	8.16		393	
	1		4.07	115.5	20.33	2.08		100	
Squash, fresh,				1	0.014	0.005	0.090	0.46	
E. P.			1		0.40	0.14	2.55	13.1	
		1			6.35	2.27	40.82	209	
	1		7.65	216.9	3.04	1.09	19.52	100	
Strawberry				1			0.050	0.20	
juice			1				1.42	5.7	
		1					22.68	91	
	1		17.6	500			25.00	100	
Sturgeon,				1	0.151	0.016		0.75	
anterior			1		4.28	0.45		21.2	
sections,		1			68.50	7.26		339	
A. P.	1		4.72	133.7	20.19	2.14		100	
Sturgeon,				1	0.181	0.019		0.90	
anterior			1		5.13	0.54		25.4	
sections,		1			82.10	8.62		406	
E. P.	1		3.91	111.7	20.22	2.12		100	
Sugar, brown				1			0.950	3.80	
			1				26.93	107.7	
		1					430.92	1724	
	1		0.93	26.3			25.00	100	
Sugar, maple				1			0.828	3.31	
			1				23.47	93.8	
		1					375.58	1502	
	1		1.07	30.2			25.00	100	
Syrup, maple,				1			0.714	2.86	
A. P.			1				20.24	81.0	
		1					323.88	1295	
	1		1.23	35.0			25.00	100	
Terrapin,				1	0.052	0.009		0.29	
A. P.			1		1.47	0.26		8.2	
		1			23.57	4.08		131	
	1		12.20	346.0	17.99	3.11		100	
Terrapin,				1	0.212	0.035		1.16	
E. P.			1		6.01	0.99		33.0	
		1			96.16	15.88		528	
	1		3.03	86.0	18.23	3.01		100	

TABLE XXIII.

FOOD VALUES OF FOOD MATERIALS USED CHIEFLY BY WEIGHT IN TERMS OF STANDARD UNITS.—*Continued.*

Food Material	P. &	Weight lbs.	Weight oz.	Weight gms.	Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars
Tripe, A. P.				1	0.117	0.012		0.58	
			1		3.32	0.34		16.3	
		1			53.07	5.44		261	
	1		6.12	173.6	20.31	2.08		100	
Trout,				1	0.091	0.051		0.82	
salmon, or			1		2.58	1.45		23.3	
lake, fresh,		1			41.28	23.13		373	
A. P.	1		4.29	121.5	11.06	6.20		100	
Trout,				1	0.178	0.103		1.64	
salmon or			1		5.05	2.92		46.5	
lake, fresh,		1			80.64	46.72		743	
E. P.	1		2.15	61.0	10.86	6.28		100	
Turkey,				1	0.161	0.184		2.30	
A. P.			1		4.56	5.22		65.2	
		1			73.03	83.46		1043	
	1		1.53	43.5	7.00	8.00		100	
Turkey,				1	0.211	0.229		2.91	
E. P.			1		5.98	6.49		82.4	
		1			95.71	103.88		1318	
	1		1.21	34.4	7.26	7.88		100	
Turtle, green,				1	0.047	0.001		0.20	
whole,			1		1.33	0.03		5.6	
A. P.		1			21.32	0.45		89	
	1		17.90	507.6	23.86	0.51		100	
Turtle, green,				1	0.198	0.005		0.84	
whole,			1		5.61	0.14		23.7	
E. P.		1			89.81	2.27		380	
	1		4.21	119.4	23.66	0.60		100	
Vanilla				1	0.066	0.140	0.716	4.39	
wafers			1		1.87	3.97	20.30	124.4	
		1			29.94	63.50	324.75	1990	
	1		0.80	22.8	1.50	3.19	16.31	100	
Veal, breast,				1	0.157	0.062		1.19	
lean, A. P.			1		4.45	1.76		33.6	
		1			71.05	28.14		538	
	1		2.97	84.3	13.24	5.23		100	
Veal, breast,				1	0.212	0.080		1.57	
lean, E. P.			1		6.01	2.27		44.5	
		1			96.16	36.29		711	
	1		2.25	63.8	13.52	5.10		100	

TABLE XXIII.

FOOD VALUES OF FOOD MATERIALS USED CHIEFLY BY WEIGHT IN TERMS OF STANDARD UNITS.—*Continued.*

Food Material	No. P.	Weight lbs.	Weight oz.	Weight gms.	Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars
Veal, breast,				1	0.156	0.110		1.61	
medium fat,			1		4.42	3.12		45.8	
A. P.		1			70.76	49.90		732	
	1		2.19	62.0	9.67	6.82		100	
Veal, breast,				1	0.194	0.138		2.02	
medium fat,			1		5.50	3.91		57.2	
E. P.		1			88.00	62.59		915	
	1		1.75	49.6	9.61	6.84		100	
Veal, chuck,				1	0.167	0.016		0.81	
lean, A. P.			1		4.74	0.45		23.0	
		1			75.75	7.26		368	
	1		4.34	123.1	20.57	1.97		100	
Veal, chuck,				1	0.206	0.019		1.00	
lean, E. P.			1		5.84	0.54		28.2	
		1			93.44	8.62		451	
	1		3.54	100.5	20.70	1.90		100	
Veal, chuck,				1	0.197	0.065		1.37	
medium fat,			1		5.58	1.84		38.9	
E. P.		1			89.36	29.48		623	
	1		2.57	72.8	14.35	4.73		100	
Veal, chuck,				1	0.160	0.052		1.11	
medium fat,			1		4.54	1.47		31.4	
A. P.		1			72.58	23.59		503	
	1		3.18	90.3	14.44	4.69		100	
Veal, flank,				1	0.205	0.104		1.76	
medium fat,			1		5.81	2.94		49.8	
A. P.		1			92.96	47.04		797	
	1		2.01	56.9	11.65	5.92		100	
Veal, kidney,				1	0.169	0.064		1.25	
A. P.			1		4.79	1.81		35.5	
		1			76.64	28.96		568	
	1		2.82	79.9	13.50	5.11		100	
Veal, leg,				1	0.194	0.037		1.11	
lean, A. P.			1		5.50	1.05		31.4	
		1			88.00	16.83		503	
	1		3.18	90.2	17.49	3.34		100	
Veal, leg,				1	0.213	0.041		1.22	
lean, E. P.			1		6.04	1.16		34.6	
		1			96.64	18.56		554	
	1		2.89	81.9	17.45	3.36		100	

TABLE XXIII.

FOOD VALUES OF FOOD MATERIALS USED CHIEFLY BY WEIGHT IN TERMS OF STANDARD UNITS.—*Continued.*

Food Material	S. P.	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars
		lbs.	oz.	gms.					
Veal, leg,				1	0.155	0.079		1.33	
medium fat,			1		4.39	2.24		37.7	
A. P.		1			70.24	35.84		603	
	1		2.65	75.1	11.64	5.93		100	
Veal, leg,				1	0.202	0.090		1.62	
medium fat,			1		5.73	2.55		45.9	
E. P.		1			91.68	40.80		734	
	1		2.18	61.8	12.48	5.56		100	
Veal, liver,				1	0.190	0.053		1.24	
A. P.			1		5.39	1.50		35.1	
		1			86.24	24.04		562	
	1		2.85	80.8	15.36	4.28		100	
Veal, loin,				1	0.159	0.044		1.03	
lean, A. P.			1		4.51	1.25		29.3	
		1			72.12	19.96		468	
	1		3.42	96.9	15.41	4.26		100	
Veal, loin,				1	0.204	0.056		1.32	
lean, E. P.			1		5.78	1.59		37.4	
		1			92.53	25.40		599	
	1		2.67	75.8	15.46	4.25		100	
Veal, loin,				1	0.166	0.090		1.47	
medium fat,			1		4.71	2.55		41.8	
A. P.		1			75.30	40.82		669	
	1		2.39	67.8	11.25	6.10		100	
Veal, loin,				1	0.199	0.108		1.77	
medium fat,			1		5.64	3.06		50.1	
E. P.		1			90.24	48.99		798	
	1		1.99	56.6	11.25	6.11		100	
Veal, neck,				1	0.139	0.046		0.97	
A. P.			1		3.94	1.30		27.5	
		1			63.05	20.87		440	
	1		3.63	103.0	14.33	4.74		100	
Veal, neck,				1	0.203	0.069		1.43	
E. P.			1		5.76	1.96		40.6	
		1			92.07	31.30		650	
	1		2.47	69.9	14.19	4.82		100	
Veal, rib,				1	0.155	0.046		1.03	
medium fat,			1		4.39	1.30		29.3	
A .P.		1			70.30	20.87		469	
	1		3.41	96.7	14.98	4.45		100	

TABLE XXIII.

FOOD VALUES OF FOOD MATERIALS USED CHIEFLY BY WEIGHT IN TERMS OF STANDARD UNITS.—*Continued.*

Food Material	S. P.	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars
		lbs.	oz.	gms.					
Veal, rib,				1	0.207	0.061		1.38	
medium fat,			1		5.87	1.73		39.0	
E. P.		1			93.88	27.67		625	
	1		2.56	72.6	15.03	4.43		100	
Veal, rump,				1	0.138	0.113		1.57	
A. P.			1		3.91	3.20		44.5	
		1			62.60	51.26		712	
	1		2.25	63.7	8.79	7.20		100	
Veal, rump,				1	0.198	0.162		2.25	
E. P.			1		5.61	4.59		63.8	
		1			89.82	73.48		1021	
	1		1.57	44.4	8.79	7.19		100	
Veal, shank,				1	0.122	0.031		0.77	
fore, A. P.			1		3.46	0.88		21.7	
		1			55.34	14.06		347	
	1		4.60	130.4	15.91	4.04		100	
Veal, shank,				1	0.207	0.052		1.30	
fore, E. P.			1		5.87	1.47		36.7	
		1			93.89	23.58		588	
	1		2.72	77.2	15.98	4.01		100	
Veal, shank,				1	0.077	0.017		0.46	
hind,			1		2.18	0.48		13.0	
medium fat,		1			34.93	7.71		209	
A. P.	1		7.65	216.9	16.70	3.68		100	
Veal, shank,				1	0.207	0.046		1.24	
hind,			1		5.87	1.30		35.2	
medium fat,		1			93.89	20.87		563	
E. P.	1		2.84	80.5	16.66	3.70		100	
Veal,				1	0.169	0.039		1.03	
shoulder,			1		4.79	1.11		29.1	
lean, A. P.		1			76.66	17.69		466	
	1		3.43	97.4	16.46	3.79		100	
Veal,				1	0.207	0.046		1.24	
shoulder,			1		5.86	1.30		35.2	
lean, E. P.		1			93.88	20.87		563	
	1		2.84	80.5	16.67	3.70		100	
Veal,				1	0.151	0.110		1.59	
shoulder,			1		4.28	3.12		45.2	
medium fat,		1			68.48	49.90		723	
A. P.	1		2.21	62.7	9.47	6.90		100	

TABLE XXIII.

FOOD VALUES OF FOOD MATERIALS USED CHIEFLY BY WEIGHT IN TERMS OF STANDARD UNITS.—*Continued.*

Food Material	S. P.	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars
		lbs.	oz.	gms.					
Veal,				1	0.197	0.144		2.08	
shoulder,			1		5.58	4.08		59.1	
medium fat,		1			89.36	65.32		945	
E. P.	1		1.69	47.9	9.45	6.91		100	
Walnuts,				1	0.072	0.146	0.030	1.72	
black,			1		2.04	4.14	0.85	48.8	
A. P.		1			32.66	56.22	13.61	781	
	1		2.05	58.1	4.18	8.48	1.74	100	
Walnuts,				1	0.276	0.563	0.117	6.64	
black,			1		7.82	15.96	3.32	188.2	
E. P.		1			125.19	255.38	53.06	3012	
	1		0.53	15 1	4.16	8.48	1.76	100	
Watermelons,				1	0.002	0.001	0.027	0.13	
fresh, A. P.			1		0.06	0.03	0.77	3.5	
		1			0.91	0.45	12.25	57	
	1		28.22	800.0	1.60	0.80	21.60	100	
Watermelons,				1	0.004	0.002	0.067	0.30	
fresh, E. P.			1		0.11	0.06	1.90	8.6	
		1			1.81	0.91	30.38	137	
	1		11.68	331.1	1.32	0.66	22.19	100	
Weakfish,				1	0.086	0.011		0.44	
whole,			1		2.44	0.32		12.6	
A. P.		1			39.01	4.99		201	
	1		7.96	225.7	19.41	2.48		100	
Weakfish,				1	0.178	0.024		0 .93	
whole,			1		5.05	0.68		26.3	
E. P.		1			80.74	10.61		421	
	1		3.80	107.8	19.18	2.59		100	
Wheat,				1	0.111	0.017	0.755	3.62	
cracked and			1		3.15	0.48	21.40	102.5	
crushed		1			50.34	7.71	342.50	1641	
	1		0.97	27.6	3.07	0.47	20.87	100	
Wheat,				1	0.136	0.024	0.745	3.74	
parched and			1		3.85	0.68	21.14	106.0	
toasted		1			61.68	10.88	337.80	1696	
	1		0.94	26.7	3.63	0.64	19.89	100	
Whey, A. P.				1	0.010	0.003	0.050	0.27	
			1		0.28	0.09	1.42	7.6	
		1			4.54	1.36	22.68	121	
	1		13.2	374.5	3.74	1.12	18.73	100	

TABLE XXIII.

FOOD VALUES OF FOOD MATERIALS USED CHIEFLY BY WEIGHT IN TERMS OF STANDARD UNITS.—*Continued.*

Food Material	S. P.	Weight			Protein, Grams	Fat, Grams	Carbohydrate, Grams	Fuel Value, Calories	Cost, Dollars
		lbs.	oz.	gms.					
Whitefish,				1	0.229	0.065		1.50	
fresh,			1		6.49	1.84		42.5	
whole,		1			103.84	29.44		680	
E. P.	1		2.35	66.6	15.26	4.33		100	
Yeast, compressed				1	0.117	0.004	0.210	1.34	
			1		3.32	0.11	5.95	38.1	
		1			53.04	1.81	95.25	610	
	1		2.62	74.4	8.70	0.30	15.62	100	

TABLE XXIV.

FOOD VALUES PER GRAM AND PER 100 CALORIES (S. P.) OF SOME LESS COMMON FOOD MATERIALS.

Food Material	Weight		Protein Grams	Fat Grams	Carbohydrate Grams	Fuel Value Calories	Cost Dollars
	S. P.	Grams					
Almond butter	1	0.216	0.615	0.116	6.86		
	1	14.58	3.15	8.97	1.69	100	
Almond meal	1	0.264	0.017	0.568	3.49		
	1	28.76	7.58	4.80	16.34	100	
Angelica	1	0.001	0.001	0.873	3.50		
	1	28.57	0.01	0.02	24.94	100	
Apricots, canned	1	0.009	.....	0.173	0.73		
	1	137.40	1.24	.....	23.76	100	
Arrowroot starch	1	.....	.....	0.975	3.90		
	1	25.64	.....	.....	25.00	100	
Artichokes, A. P.	1	0.026	0.002	0.167	0.79		
	1	126.60	3.29	0.25	21.13	100	
Asparagus, canned, drained	1	0.027	0.005	0.035	0.29		
	1	346.0	9.34	1.59	12.12	100	
Bacon, broiled	1	0.230	0.670	.....	6.95		
	1	14.39	3.31	9.64	.....	100	
Barley flour	1	0.105	0.022	0.728	3.53		
	1	28.32	2.98	0.62	20.62	100	
Beef, fat flank, stewed	1	0.200	0.342	.....	3.87		
	1	25.81	5.16	8.82	.....	100	
Beef, lean, round, 1 inch thick, pan-broiled	1	0.225	0.098	.....	1.78		
	1	56.11	12.63	5.50	.....	100	
Beef, lean round, pot roast	1	0.345	0.097	.....	2.25		
	1	44.44	15.35	4.29	.....	100	
Bread, toasted, white, 20.0% water loss	1	0.116	0.015	0.658	3.23		
	1	30.95	3.59	0.46	20.36	100	
Bread crumbs (oven dried, water content 6%)	1	0.131	0.018	0.759	3.72		
	1	26.87	3.52	0.48	20.39	100	
Bread crumbs, stale, water loss 20%	1	0.10	0.014	0.570	2.81		
	1	35.63	3.563	0.50	20.32	100	

TABLE XXIV.

FOOD VALUES PER GRAM AND PER 100 CALORIES OF SOME LESS COMMON FOOD MATERIALS.—*Continued.*

Food Material	Weight		Protein Grams	Fat Grams	Carbohydrate Grams	Fuel Value Calories	Cost Dollars
	S. P.	Grams					
Buns, cinnamon	1	29.52	0.094 2.77	0.072 2.13	0.591 17.45	3.39 100	
Buns, currant	1	30.71	0.067 2.06	0.076 2.33	0.576 17.69	3.26 100	
Chicken, canned, boned	1	44.25	0.277 12.26	0.128 5.66		2.26 100	
Chicken, meat	1	55.16	0.226 12.47	0.101 5.57		1.81 100	
Chicken meat, visible fat removed	1	91.14	0.218 19.87	0.025 2.28		1.10 100	
Chicken, potted	1	38.41	0.194 7.45	0.203 7.80		2.60 100	
Chicken, soup, canned	1	162.1	0.029 4.70	0.033 5.35	0.051 8.29	0.62 100	
Chocolate, milk *	1	18.13	0.080 1.45	0.350 6.35	0.511 9.26	5.52 100	
Citron	1	32.10	0.001 0.03	0.001 0.02	0.776 24.92	3.11 100	
Corn oil	1	11.11		1.000 11.11		9.000 100	
Corn, puffed	1	26.60	0.093 2.46	0.003 0.67	0.842 22.39	3.76 100	
Corn syrup	1	29.41			0.850 25.00	3.400 100	
Cottonseed oil	1	11.11		1.000 11.11		9.000 100	
Crab meat, canned	1	125.80	0.158 19.87	0.015 1.89	0.007 0.889	0.80 100	
Cream, 25%	1	39.66	0.028 1.11	0.250 9.91	0.040 1.58	2.52 100	
Cream, 32%	1	32.09	0.024 0.77	0.320 10.27	0.035 1.12	3.12 100	
Crisco	1	11.11		1.000 11.11		9.000 100	

* Av. 10 brands, Conn. Exp. Sta. Dept. 1911.

TABLE XXIV.

FOOD VALUES PER GRAM AND PER 100 CALORIES OF SOME LESS COMMON FOOD MATERIALS.—*Continued.*

Food Material	Weight		Protein Grams	Fat Grams	Carbohydrate Grams	Fuel Value Calories	Cost Dollars
	S. P.	Grams					
Dextri-maltose	 1	1	.....	.....	0.930	3.72	.....
	1	26.88	.....	.....	25.00	100	.....
Duck, A. P.	 1	1	0.154	0.160	.....	2.06	.....
	1	48.63	7.54	7.78	.....	100	.....
Duck, E. P.	 1	1	0.183	0.190	.....	2.44	.....
	1	40.95	7.49	7.78	.....	100	.....
Duck, breast	1	1	0.223	0.033	.....	1.19	.....
	1	83.89	18.71	2.77	.....	100	.....
Grapefruit	 1	1	0.008	0.002	0.104	0.47	.....
	1	212.80	1.72	0.45	22.10	100	.....
Guinea hen, A. P.	 1	1	0.194	0.054	.....	1.26	.....
	1	79.23	15.37	4.28	.....	100	.....
Guinea hen, E. P.	 1	1	0.231	0.065	.....	1.51	.....
	1	66.28	15.31	4.31	.....	100	.....
Ice cream (commercial)	 1	1	0.025	0.151	0.182	2.19	.....
	1	45.72	1.13	6.90	8.32	100	.....
Ice cream cones (without ice cream	 1	1	0.166	0.026	0.765	3.96	.....
	1	25.27	4.20	0.65	19.35	100	.....
Jelly, cherry	 1	1	0.011	.....	0.772	3.13	.....
	1	31.93	0.35	.....	24.65	100	.....
Kidney beans, E. P.	 1	1	0.411	0.016	0.421	3.47	.....
	1	28.82	11.83	0.47	11.85	100	.....
Kohl rabi, E. P.	 1	1	0.020	0.001	0.055	0.31	.....
	1	323.60	6.47	0.32	17.80	100	.....
Lactose	 1	1	.....	.....	1.000	4.00	.....
	1	25.00	.....	.....	25.00	100	.....
Lamb, leg, roasted	 1	1	0.197	0.127	.....	1.93	.....
	1	51.78	10.21	6.58	.....	100	.....
Malt breakfast food	 1	1	0.118	0.005	0.753	3.53	.....
	1	28.39	3.36	0.14	21.39	100	.....
Milk, dried skim	 1	1	0.377	0.014	0.499	3.63	.....
	1	27.57	10.40	0.37	13.77	100	.....
Milk, dried whole	 1	1	0.250	0.280	0.390	5.08	.....
	1	19.68	4.92	5.51	7.68	100	.....

TABLE XXIV.

FOOD VALUES PER GRAM AND PER 100 CALORIES OF SOME LESS COMMON FOOD MATERIALS.—*Continued.*

Food Material	Weight		Protein Grams	Fat Grams	Carbo hydrate Grams	Fuel Value Calories	Cost Dollars
	S. P.	Grams					
Milk, human	1	0.015	0.033	0.065	0.617		
	1	162.10	2.43	5.35	10.53	100	
Milk, malted	1	0.138	0.030	0.768	3.894		
	1	25.68	3.59	0.77	19.72	100	
Milk, upper 1 ounce*	1	0.028	0.225	0.040	2.30		
	1	43.53	1.22	9.80	1.74	100	
Milk, upper 2 ounces	1	0.028	0.215	0.040	2.21		
	1	45.31	1.27	9.74	1.81	100	
Milk, upper 4 ounces	1	0.028	0.200	0.040	2.07		
	1	48.26	1.35	9.65	1.93	100	
Milk, upper 6 ounces	1	0.029	0.170	0.042	1.81		
	1	55.13	1.60	9.40	2.30	100	
Milk, upper 8 ounces	1	0.030	0.140	0.043	1.55		
	1	60.53	1.82	8.47	2.60	100	
Milk, upper 10 ounces	1	0.030	0.115	0.043	1.33		
	1	75.36	2.26	8.67	3.24	100	
Milk, upper 12 ounces	1	0.031	0.098	0.045	1.19		
	1	84.29	2.61	8.26	3.79	100.	
Milk, upper 16 ounces	1	0.031	0.076	0.046	0.99		
	1	100.80	3.13	7.66	4.64	100	
Milk, upper 20 ounces	1	0.032	0.062	0.047	0.87		
	1	114.41	3.66	7.09	5.38	100	
Milk, upper 24 ounces	1	0.032	0.052	0.048	0.79		
	1	126.90	4.06	6.60	6.09	100	
Milk, upper 28 ounces	1	0.033	0.045	0.048	0.73		
	1	137.20	4.54	6.17	6.58	100	
Mince meat	1	0.067	0.014	0.602	2.802		
	1	35.69	2.391	0.4996	21.48	100	
Orange marmalade	1	0.006	0.001	0.845	3.41		
	1	29.29	0.18	0.03	24.76	100	
Oyster plant, (salsify) fresh, E. P.	1	0.043	0.003	0.069	0.47		
	1	211.00	8.99	0.70	14.45	100	
Paté de fois gras	1	0.136	0.382	0.043	4.15		
	1	24.07	3.27	9.20	1.04	100	

* From a quart bottle after standing from 12 to 24 hours.

TABLE XXIV.

FOOD VALUES PER GRAM AND PER 100 CALORIES OF SOME LESS COMMON FOOD MATERIALS.—*Continued.*

Food Material	Weight		Protein Grams	Fat Grams	Carbohydrate Grams	Fuel Value Calories	Cost Dollars
	S. P.	Grams					
Pea meal	1	24.21	0.359 8.69	0.175 4.24	0.280 6.78	4.13 100	
Peanut oil	1	11.11	....	1.000 11.11	....	9.00 100	
Peas, canned, drained	1	212.70	0.030 6.38	0.002 0.43	0.083 17.66	0.47 100	
Peppers, green, fresh, E. P.	1	386.10	0.016 6.18	0.002 0.58	0.045 17.53	0.26 100	
Persimmons, fresh, E. P.	1	73.80	0.008 0.59	0.007 0.52	0.315 23.25	1.36 100	
Pheasant, A. P.	1	80.78	0.215 17.37	0.042 3.43	....	1.24 100	
Pheasant, E. P.	1	71.04	0.244 17.34	0.048 3.41	....	1.41 100	
Pigeon, A. P.	1	125.50	0.197 24.74	0.001 0.12	....	0.80 100	
Pigeon, E. P.	1	108.50	0.228 24.73	0.001 0.12	....	0.92 100	
Quail, A. P.	1	69.39	0.223 15.47	0.061 4.23	....	1.44 100	
Quail, E. P.	1	62.04	0.250 15.51	0.068 4.22	....	1.61 100	
Rice, boiled	1	107.60	0.018 1.91	0.001 0.06	0.213 22.95	0.93 100	
Rice, puffed	1	27.02	0.083 2.23	0.003 0.07	0.837 22.61	3.70 100	
Rye, cream of	1	28.40	0.116 3.30	0.015 0.42	0.731 20.78	3.52 100	
Soy beans	1	23.44	0.365 8.56	0.175 4.10	0.308 7.22	4.27 100	
Soy bean meal	1	23.18	0.400 9.24	0.191 4.42	0.251 5.82	4.31 100	
Squab, A. P.	1	43.44	0.157 6.82	0.186 8.08	....	2.30 100	

TABLE XXIV.

FOOD VALUES PER GRAM AND PER 100 CALORIES OF SOME LESS COMMON FOOD MATERIALS.—*Continued.*

Food Material	Weight		Protein Grams	Fat Grams	Carbohydrate Grams	Fuel Value Calories	Cost Dollars
	S. P.	Grams					
Squab, E. P.	1	36.59	0.186 6.81	0.221 8.09	....	2.733 100	....
Squash, fresh, E. P.	1	217.40	0.014 3.04	0.005 1.09	0.090 19.56	0.46 100	....
Tomato soup, canned *	1	199.30	0.015 2.97	0.007 1.40	0.095 18.89	0.50 100	....
Tuna fish, A. P.	1	80.85	0.217 17.55	0.041 3.32	....	1.24 100	....
Turkey, dark meat, cooked	1	51.16	0.392 20.05	0.043 2.20	....	1.96 100	....
Turkey, dark meat, raw	1	36.90	0.214 7.89	0.206 7.60	....	2.71 100	....
Turkey, light meat, cooked	1	54.79	0.346 18.95	0.049 2.69	....	1.83 100	....
Turkey, light meat, raw	1	53.37	0.257 13.72	0.094 5.02	....	1.87 100	....
Turkey, potted	1	37.48	0.172 6.45	0.220 8.25	....	2.67 100	....
Wheat, cream of	1	27.31	0.110 3.00	0.009 0.25	0.786 21.44	3.66 100	....
Wheat, puffed	1	26.76	0.162 4.33	0.018 0.482	0.732 19.58	3.74 100	....

* Average of 3 brands.

TABLE XXV.

ENERGY CONTENT OF FOODS SOLD BY CONFECTIONERS.*

Food Material	Calories per Gram	Weight to yield 100 Calories, Grams	Cost of Market Unit, Dollars
Chocolate, nut (sold in bars)	5.70	17.54	.....
Chocolate, plain sweet (sold in bars)	5.60	17.85	.....
Almonds, chocolate	6.40	15.63	.....
Almonds, salted	7.54	13.26	.....
Almonds, sugar	4.30	23.26	.....
Caramels	4.50	22.22	.....
Cocoanut bars	4.10	24.39	.....
Crackers, fruit	4.00	25.00	.....
Crackers, sweet	4.50	22.22	.....
Filberts, salted	7.89	12.68	.....
Gum drops	3.40	29.41	.....
Jelly beans	3.60	27.77	.....
Licorice bars	3.40	29.41	.....
Marshmallows	3.30	30.31	.....
Mints, chocolate cream	3.80	26.31	.....
Mints, cream	3.60	27.77	.....
Nougatines, chocolate coated	4.50	22.22	.....
Peanut bar	5.90	16.94	.....
Pecans, salted	7.67	13.04	.....
Peppermints, chocolate coated	4.50	22.22	.....
Peppermints, molasses	3.80	26.31	.....
Stick candy	3.70	27.03	.....
Suckers (lollypops)	3.80	26.31	.....
Pretzels	4.87	20.53	.....
Wafers, fancy sugar (average)	5.00	20.00	.....

* Adapted from The Energy Content of Extra Foods, Benedict and Benedict, Boston Medical and Surgical Journal, Vol. 179 (1918), pp. 153–162; Vol. 181 (1919) pp. 415–422.

TABLE XXVI.*

ASH CONSTITUENTS OF FOODS IN PERCENTAGE OF THE EDIBLE PORTION
(Compiled from Various Sources)

FOOD	CALCIUM (Ca)	MAGNESIUM (Mg)	POTASSIUM (K)	SODIUM (Na)	PHOSPHORUS (P)	CHLORINE (Cl)	SULPHUR (S)	IRON (Fe)
Almonds	.239	.251	.741	.019	.465	.037	.160	.0039
Apples	.007	.008	.127	.011	.012	.005	.006	.0003
dried	.032	.037	(.623)	(.050)	.048	(.025)	?	(.0015)
Apricots	.014	.010	.248	.038	.025	.002	.010	(.0003)
dried	(.066)	(.047)	(1.157)	(.177)	(.117)	(.009)	?	(.0014)
Asparagus	.025	.011	.196	.007	.039	.039	.041	.0010
Bacon (See Meat)								
Bananas	.009	.028	.401	.034	.031	.125	.010	.0006
Barley, entire	.043	.131	.477	.076	.400	.016	.153	.0041
pearled	.020	(.070)	(.241)	(.037)	.181	(.016)	(.120)	(.0020)
Beans, dried	.160	.156	1.229	.097	.471	.032	.215	.0070
kidney, dry	.132	.139	1.144	.041	.475	.041	.227	.0072
Lima, dry	.071	.188	1.741	.249	.338	.026	.161	.0070
Lima, fresh	.028	(.070)	(.613)	(.088)	.133	(.009)	(.057)	.0020
string, fresh	.046	.025	.247	.019	.052	.024	.030	.0011
Beef (See Meat)								
Beer	.004	.008	.058	.013	.028	.006	.015	.0001
Beets	.029	.021	.353	.093	.039	.058	.016	.0006
Blackberries	.017	.021	.169	(.007)	.034	(.010)	.020	.0006
Blood (avg.)	.008	.004	.075	.261	.031	.280	.137	.0526
Blueberries	.020	.007	.051	.016	.008	.008	.011	.0009
Bluefish (See Fish)								
Bread,								
Boston brown	.129	.078	(.232)	(.394)	.185	(.607)	.201	(.0030)
"entire wheat"	(.05)	(.05)	(.208)	(.394)	(.175)	(.607)	(.120)	(.0016)
graham	(.05)	(.05)	(.291)	(.394)	(.218)	(.607)	.150	(.0025)
rye	.024	.039	.151	.701	.148	1.025	.104	(.0016)
white	.027	.023	.108	(.394)	.093	(.607)	.105	.0009
Breadfruit	.084	.007	.235	.027	.068	.100	.049	
Brussels sprouts	.027	.040	.375	.004	.120	.040	.194	(.0011)
Buckwheat flour	.039	.048	.130	.027	.226	.012	.071	.0012
Butter	.015	.001	.014	(.788)	.017	(1.212)	(.010)	.0002
Buttermilk	.105	.016	.151	.064	.097	.099	.026	.00025

* Reprinted from The Chemistry of Food and Nutrition, Revised Edition, by Henry C. Sherman, by permission of author and publishers.

TABLE XXVI.—*Continued.*

Food	Calcium (Ca)	Magnesium (Mg)	Potassium (K)	Sodium (Na)	Phosphorus (P)	Chlorine (Cl)	Sulphur (S)	Iron (Fe)
Cabbage	.045	.015	.247	.027	.029	.024	.066	.0011
Cabbage greens	.106	.030	.512	.025	.099	.068	.173	.0018
Cantaloupe	.017	.012	.235	.061	.015	.041	.014	.0003
Capers	.122	.022	.209	.051	.062	—	—	—
Carp (See Fish)								
Carrots	.056	.021	.287	.101	.046	.036	.022	.0006
Cauliflower	.123	.014	.222	.068	.061	.050	.086	.0006
Caviar	.137	.022	.422	.874	.176	1.819	—	—
Celery	.078	.014	.316	.084	.037	.156	.022	.0005
Chard	.150	.071	.318	.086	.040	.039	.124	(.0025)
Cheese	.931	.037	.089	.606	.683	.880	.263	.0013
Cherries	.019	.016	.213	.023	.031	.014	.011	.0004
Cherry juice	.017	.011	.200	.013	.018	.003	.006	(.0003)
Chestnuts	.034	.051	.560	.065	.093	.006	.068	.0007
Chicken (See Meat)								
Chocolate	.092	(.293)	(.563)	.012	.455	(.051)	.085	(.0027)
Cider	.008	.011	.095	.020	009	.006	.006	(.0002)
Citron	.121	.018	.210	.011	.033	.003	.020	—
Clams, round	.106	.098	.131	.705	.046	1.220	.224	—
soft, long	.124	.079	.212	.500	.122	.910	.213	—
Cocoa	.112	.420	.900	.059	.709	.051	.203	.0027
Coconut, dried	.059	.059	.597	.073	.155	.239	(.056)	—
fresh	.024	.020	.300	.036	.074	.120	.028	—
Coconut milk	.020	.009	.144	—	.010	—	.008	—
Cod (See Fish)								
Corn(maize),mature	.020	.121	.339	.036	.283	.045	.151	.0029
meal	.018	.084	.213	.039	.190	.146	.111	.0009
sweet	.006	.033	.113	.040	.103	.014	.046	.0008
sweet, dried	.021	.121	.414	.146	.376	.050	.167	.0029
Cotton-seed meal	.265	.462	1.390	.234	1.193	.037	.485	—
Cowpeas	.100	.208	1.402	.161	.456	.040	.240	—
Crackers	.022	.011	.100	(.594)	.102	(.910)	.125	.0015
Cranberries	.018	.007	.077	.010	.013	.009	.007	.0006
Cream	.086	.010	.126	.035	.067	.080	.030	.0002
Cucumbers	.016	.009	.140	.010	.033	.030	.020	.0002
Currants, dried	.082	.044	.873	.081	.195	.060	.044	(.0025)
fresh	.026	.017	.211	.007	.038	.006	.014	.0005

TABLE XXVI—*Continued.*

Food	Calcium (Ca)	Magnesium (Mg)	Potassium (K)	Sodium (Na)	Phosphorus (P)	Chlorine (Cl)	Sulphur (S)	Iron (Fe)
Currant juice . .	.021	.010	.185	(.006)	.018	.004	.005	—
Dandelion . . .	.105	.036	.461	.168	.072	.099	.017	.0027
Dates	.065	.069	.611	.055	.056	.228	.070	.0030
Duck (See Meat)								
Eggplant	.011	.015	(.140)	(.010)	.034	.024	.016	.0005
Eggs	.067	.011	.140	.143	.180	.106	.195	.0030
Egg white . . .	.015	.010	.160	.156	.014	.155	.216	.0001
Egg yolk	.137	.016	.115	.075	.524	.094	.166	.0086
Endive	.104	.013	.380	.109	.038	.167	.035	—
Farina	.021	.025	.120	.065	.125	.076	.155	.0008
Figs, dried . . .	.162	.071	.964	.046	.116	.043	.056	.0030
fresh	.053	.022	.303	.012	.036	.014	.010	—
Fish *								
Flaxseed	.204	.252	.901	.050	.627	.022	.170	—
Flour, buckwheat .	.010	.048	.130	.027	.176	.012	.071	.0012
"entire wheat" .	.031	(.090)	(.274)	(.037)	.238	(.070)	(.180)	.0025
graham . . .	.039	(.133)	(.457)	(.037)	.364	(.070)	.183	.0037
white	.020	.018	.115	.060	.092	.074	.177	.0010
rye	.018	.081	.463	.019	.289	.055	.123	.0013
Fowl (See Meat)								
Gluten feed . . .	.247	.221	.250	.420	.542	.090	.558	—
Goose (See Meat)								
Gooseberries . .	.035	.014	.197	.038	.031	—	.011	.0005
Grapefruit . . .	.021	.009	.161	.004	.020	.005	.010	.0003
Grapejuice . . .	.011	.009	.106	.005	.011	.002	.009	.0003
Grapes	.019	.010	.197	.015	.031	.005	.024	.0003
Guava	.014	.008	.384	—	.030	.045	—	—
Haddock (See Fish)								
Halibut (See Fish)								
Ham (See Meat)								
Hazelnuts . . .	.287	.140	.618	.019	.354	.067	.198	.0041
Herring (See Fish)								
Hominy	.011	.058	.174	.020	.144	.046	(.136)	(.0009)

* Average fish is estimated to contain **per 100 grams of protein** as follows: 0.109 gram Ca; 0.133 gram Mg; 1.671 grams K; 0.373 gram Na; 1.148 grams P; 0.528 gram Cl; 1.119 grams S; 0.0055 gram Fe.

TABLE XXVI—*Continued.*

Food	Calcium (Ca)	Magnesium (Mg)	Potassium (K)	Sodium (Na)	Phosphorus (P)	Chlorine (Cl)	Sulphur (S)	Iron (Fe)
Honey	.004	.018	.386	.001	.019	.029	.001	.0007
Horseradish . . .	.096	.039	.468	.062	.076	.016	.190	—
Huckleberries . .	.020	.007	.051	.016	.008	.008	.011	.0009
Huckleberry wine	.009	.004	.042	.006	.004	.001	.006	—
Jam *								
Jelly	.014	(.010)	(.100)	(.013)	.008	(.004)	(.007)	(.0003)
Kohl-rabi . . .	.077	.030	.370	.050	.071	.053	.057	.0006
Lamb (See Meat)								
Leeks	.058	.014	.199	.081	.006	.024	.072	—
Lemons	.036	.007	.175	.004	.022	.002	.011	.0006
Lemon juice . . .	.024	.010	.127	.009	.010	.003	.006	—
Lemon, sweet . .	.030	.006	.442	—	.042	.013	.016	—
Lentils, dry . . .	.107	.101	.877	.062	.438	.050	.277	.0086
Lettuce	.043	.017	.339	.027	.042	.074	.014	.0007
Limes	.055	.014	.350	.062	.036	.039	.010	—
Lime juice . . .	—	—	—	—	—	—	.003	—
Linseed meal . .	.413	.432	1.083	.251	.741	.085	.396	—
Lupins, dry . . .	.191	.191	.840	.073	.520	.034	—	—
Macaroni . . .	.022	.037	.130	.008	.144	.073	.172	.0012
Mackerel (See Fish)								
Mamey	.009	.012	.345	—	.028	.140	—	—
Mango	.021	.007	.235	—	.017	.019	.013	—
Mangolds . . .	.026	.030	.334	.071	.038	.082	.026	—
Maple syrup . .	.107	.034	.208	.010	.013	(.010)	(.005)	(.003)
Meat †								
Meat extract, solid	.085	.363	7.347	2.394	2.800	3.117	—	—
Meat peptone . .	.025	.124	2.440	.641	1.130	.561	.222	—
Milk (cow's), whole	.120	.012	.143	.051	.093	.106	.034	.00024
(cow's), skimmed	(.122)	(.012)	(.149)	(.052)	(.096)	(.110)	(.035)	.00025
(cow's), condensed . . .	(.300)	(.032)	(.374)	(.134)	.235	(.280)	(.090)	.0006

* The percentages of the ash constituents in jams are believed to average about two thirds those of the corresponding fruits.

† Average meat is estimated to contain **per 100 grams protein** as follows: 0.058 gram Ca; 0.118 gram Mg; 1.694 grams K; 0.421 gram Na; 1.078 grams P; 0.378 gram Cl; 1.146 grams S; 0.0150 gram Fe.

TABLE XXVI—*Continued.*

Food	Calcium (Ca)	Magnesium (Mg)	Potassium (K)	Sodium (Na)	Phosphorus (P)	Chlorine (Cl)	Sulphur (S)	Iron (Fe)
Milk — *Cont.*								
buffalo	.203	.016	.099	.038	.125	.062	—	—
camel's	.143	.021	.114	.019	.098	.105	—	—
goat's	.128	.013	.145	.079	.103	.014	.037	—
human	.034	.005	.047	.010	.015	.035	—	—
mare's	.083	.007	.081	.010	.054	.029	—	—
sheep's	.207	.008	.187	.030	.123	.071	—	—
Millet	.014	.167	.290	.085	.327	.019	—	—
Molasses	.211	.068	1.349	.019	.044	.317	.129	.0073
Mushrooms	.017	.016	.384	.027	.108	.021	.051	—
Muskmelon	.017	.012	.235	.061	.015	.041	.014	.0003
Mustard	.492	.260	.761	.056	.755	.016	1.230	—
Mutton (See Meat)								
Oatmeal	.069	.110	.344	.062	.392	.069	.202	.0038
Okra	.071	.010	.035	.043	.019	—	—	—
Olives	.122	.002	1.526	.128	.014	.004	.027	.0029
Onions	.034	.016	.178	.016	.045	.021	.070	.0006
Oranges	.045	.012	.177	.012	.021	.006	.011	.0002
Orange juice	.029	.011	.182	.008	.016	.003	.009	.0002
Oysters	.052	.037	.091	.459	.155	.590	.187	.0045
Paprika	.229	.164	2.075	.178	.341	.155	—	—
Parsnips	.059	.034	.518	.004	.076	.030	.036	.0006
Peaches	.016	.010	.214	.022	.024	.004	.009	.0003
dried	.034	.056	(.830)	.082	.146	—	.212	(.0012)
Peanuts	.071	.180	.654	.050	.399	.056	.224	.0020
Pears	.015	.011	.132	.016	.026	.011	.010	.0003
Pear juice	.009	.008	.140	—	.011	—	.009	—
Peas, dried	.084	.149	.903	.104	.400	.035	.219	.0057
fresh	.028	.038	.285	.013	.127	.024	.063	.0017
Pecan nuts	.089	.152	(.332)	—	.335	.050	.113	.0026
Pepper, green, fresh	.006	.010	(.139)	—	.026	.013	.014	.0004
Pepper, black, dry	.440	.156	1.140	.131	.188	.312	—	—
Pepper, white, dry	.425	.113	—	—	.233	.029	—	—
Perch (See Fish)								
Persimmons	.022	.009	.292	.011	.021	.002	.005	—
Pineapple	.018	.011	.321	.016	.028	.051	.009	.0005
Plums	.020	.011	.203	.019	.032	.002	.009	.0005

TABLE XXVI—*Continued.*

Food	Calcium (Ca)	Magnesium (Mg)	Potassium (K)	Sodium (Na)	Phosphorus (P)	Chlorine (Cl)	Sulphur (S)	Iron (Fe)
Pomegranate . .	.011	.005	.063	.085	.105	.003	—	.0004
Pork (See Meat)								
Potatoes	.014	.028	.429	.021	.058	.038	.030	.0013
sweet	.019	.028	.397	.039	.045	.094	.024	.0005
Prunes, dried . .	.054	.055	1.030	.069	.105	.017	.037	.0030
Pumpkin	.023	.008	(.320)	.065	.059	—	.021	(.0008)
Radishes . . .	.021	.012	.218	.069	.029	.054	.041	.0006
Raisins	.064	.083	.820	.133	.132	.082	.051	.0021
Raspberries . . .	.049	.024	.173	—	.052	—	.017	.0006
Raspberry juice .	.021	.016	.134	.005	.012	—	.009	—
Rhubarb	.044	.017	.325	.025	.031	.036	.013	.0010
Rice, brown . . .	—	—	—	—	.207	—	—	.0020
white	.009	.033	.070	.025	.096	.054	.117	.0009
Romaine (salad) .	.045	.032	.306	.016	.053	.073	.019	—
Rutabagas . . .	.074	.018	.399	.083	.056	.058	.083	—
Rye, entire . . .	.055	.130	.453	.035	.385	.025	.170	.0039
(See also Bread and Flour)								
Salmon (See Fish)								
Sapato	.026	.008	.179	—	.006	.087	—	—
Shredded wheat .	.041	.144	—	—	.324	—	—	.0045
Shrimp	.096	—	—	—	—	—	—	—
Soup, canned . .	.036	—	.033	—	.030	—	—	—
canned vegetable	.025	.013	.101	—	.038	—	.025	—
Spinach	.067	.037	.774	.125	.068	.074	.038	.0036
Squash, summer, seeds removed	.018	.008	.150	.002	—	—	—	(.0006)
with seeds . .	.024	.012	.180	.004	—	—	—	(.0006)
Squash, winter . .	.019	.011	.320	.004	—	—	—	(.0006)
Strawberries . .	.041	.019	.147	.050	.028	.006	.014	.0008
Tamarind . . .	.007	.021	—	—	.072	.007	.009	—
Tapioca	.023	—	—	—	.090	.018	.029	.0016
Tomatoes . . .	.011	.010	.275	.010	.026	.034	.014	.0004
Tomato juice . .	.006	.010	.310	.015	.015	.055	—	—
Truffles	.024	.018	.404	.077	.062	.039	—	—
Turnips	.064	.017	.338	.056	.046	.041	.065	.0005
Turnip tops . .	.347	.028	.307	.082	.049	.168	.069	—

TABLE XXVI—*Continued.*

Food	Calcium (Ca)	Magnesium (Mg)	Potassium (K)	Sodium (Na)	Phosphorus (P)	Chlorine (Cl)	Sulphur (S)	Iron (Fe)
Veal (See Meat)								
Vinegar (cider) .	.016	.008	.165	—	.013	—	.017	(.0003)
Walnuts	.089	.134	(.332)	—	.358	.040	.172	.0021
Water cress . . .	.187?	.034	.287	.099	.005	.061	.167	.0019
Watermelon . .	.011	.003	.073	.008	.003	.008	.007	
Wheat, entire . . (See also Bread and Flour)	.045	.133	.473	.039	.423	.068	.181	.0050
Wheat bran . . .	.120	.511	1.217	.154	1.215	.090	.247	.0078
Wheat germ . .	.071	.342	.296	.722	1.050	.070	.325	—
Wheat gluten . .	.078	.045	.007	.028	.200	.050	.920	—
Whey	.044	.008	.157	.038	.035	.119	.009	?
Whortleberries, entire	.031	.021	.261	.021	.042	—	—	—
flesh only . . .	.020	.011	.087	—	.018	—	—	—
Wine (avg.) . . .	.009	.010	.104	.008	.015	.011	.015	(.0003)

TABLE XXVII.*

PROTEIN, CALCIUM, PHOSPHORUS, AND IRON IN GRAMS PER 100 CALORIES OF FOOD MATERIAL

(Estimated from data compiled from various sources)

Food	Protein	Calcium (Ca)	Phosphorus (P)	Iron (Fe)	CaO	P_2O_5
	Grams	Grams	Grams	Grams	Grams	Grams
Almonds	3.22	.037	.072	.00060	.052	.165
Apples	0.64	.012	.020	.00048	.016	.045
Apricots	1.90	.023	.044	.00052	.033	(.100)
Asparagus	8.10	.122	.177	.00451	.171	.405
Bacon (See Meat)						

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TABLE XXVII—*Continued.*

Food	Protein	Calcium (Ca)	Phosphorus (P)	Iron (Fe)	CaO	P_2O_5
	Grams	Grams	Grams	Grams	Grams	Grams
Bananas	1.32	.009	.031	.00061	.012	.072
Beans, dried	6.52	.047	.137	.00203	.065	.314
kidney	5.83	(.040)	(.143)	(.00216)	(.056)	(.326)
Lima	5.80	.020	.096	.00200	.028	.221
string	5.55	.110	.126	.00265	.154	.289
Beef (See Meat)						
Beer	—	.008	.061	.00217	.011	.140
Beets	3.47	.064	.084	.00130	.089	.193
Blackberries	2.25	.029	.058	.00104	.042	.133
Blueberries	(0.8)	(.027)	(.011)	(.0012)	(.038)	(.025)
Bluefish (See Fish)						
Bread, Boston brown	2.64	.056	.082	(.0013)	.079	.187
"entire" wheat	3.95	(.020)	.071	(.00065)	(.028)	(.163)
graham	3.42	(.020)	.084	(.00096)	(.028)	(.192)
rye	3.54	.009	.058	.00039	.013	.133
white	3.50	.011	.035	.00035	.015	.081
Brussels sprouts	(7.30)	(.086)	(.380)	(.00349)	(.121)	(.870)
Buckwheat flour	1.85	.011	.065	.00034	.015	.148
Butter	0.13	.002	.002	.00003	.003	.005
Buttermilk	8.40	.294	.271	.00070	.411	.621
Cabbage	5.07	.143	.092	.00349	.200	.210
Cantaloupe	1.51	.044	.038	.00071	.061	.088
Carp (See Fish)						
Carrots	2.42	.124	.101	.00133	.173	.232
Cauliflower	5.90	.403	.200	.00197	.564	.459
Celery	1.28	.421	.201	.00270	.589	.460
Chard	8.37	.393	.105	(.00655)	.550	.240
Cheese	6.05	.212	.156	.00030	.297	.357
Cherries	1.20?	.025	.039	.00051	.035	.090
Chestnuts	2.55	.014	.044	.00029	.019	.088
Chicken (See Meat)						
Chocolate	2.11	.015	.075	(.00044)	.021	.171
Citron	0.15	.037	.010	.00099	.052	.023
Clams, long	19.82	.285	.282	(.00970)	.399	.645
round	14.01	.229	.100	(.00970)	.321	.228
Cocoa	4.35	.023	.143	.00054	.032	.327
Coconut	0.95	.006	.018	(.00030)	.009	.041
Cod (See Fish)						

TABLE XXVII—*Continued.*

Food	Protein	Calcium (Ca)	Phosphorus (P)	Iron (Fe)	CaO	P_2O_5
	Grams	Grams	Grams	Grams	Grams	Grams
Corn	3.06	.006	.102	.00079	(.008)	(.233)
Corn meal	2.59	.005	.053	.0003	.007	.121
Cotton-seed meal	12.80	.066	.298	—	.092	.682
Cowpeas	6.20	.029	.132	—	.041	.303
Crackers, "soda"	2.37	.006	.025	.00036	.008	.057
Cranberries	0.85	.039	.027	.00129	.054	.062
Cream, 18.5 per cent fat	1.27	.050	.044	.0001	.072	.100
40 per cent fat	0.58	.020	.020	.00005	.032	.045
Cucumbers	4.60	.090	.191	.00115	.126	.437
Currants, dried (Zante)	0.75	.026	.061	.00087	.036	.139
fresh	2.62	.045	.066	.00087	.063	.150
Dandelion greens	3.93	.172	.117	.0044	.241	.269
Dates	0.60	.019	.016	.00086	.026	.037
Duck (See Meat)						
Eggplant	4.30	.041	.122	.00184	.057	.280
Eggs	9.05	.045	.122	.00205	.063	.279
Egg white	24.12	.020	.022	.00020	.028	.050
Egg yolk	4.32	.036	.118	.00230	.050	.270
Farina	3.05	.006	.035	.00022	.008	.079
Figs	1.35	.051	.037	.00095	.072	.084
Fish (See footnote on page 135)						
Flour, buckwheat	1.84	.011	.065	.00034	.015	.148
"entire" wheat	3.85	.009	.066	.0007	.012	.152
graham	3.71	.011	.101	.00100	.015	.232
white (wheat)	3.20	.006	.026	.00023	.008	.060
rye	1.95	.005	.082	.00037	.007	.188
Fowl (See Meat)						
Goose (See Meat)						
Grapefruit	1.15	.040	.036	.00058	.056	.083
Grapes	1.35	.019	.032	.00031	.027	.074
Grapejuice	0.35	(.011)	.011	.0003	.015	.025
Haddock (See Fish)						
Halibut (See Fish)						
Ham (See Meat)						
Hazelnuts	—	.041	.050	.00057	.057	.115
Herring (See Fish)						
Hominy	2.35	.002	.027	.00025	.002	.063

TABLE XXVII—*Continued.*

Food	Protein	Calcium (Ca)	Phosphorus (P)	Iron (Fe)	CaO	P_2O_5
	Grams	Grams	Grams	Grams	Grams	Grams
Honey	0.12	.002	.006	.0003	.002	.013
Huckleberries	0.82	.027	.011	.0012	.038	.025
Kohl-rabi	6.48	.249	.186	.00194	.349	.426
Lamb (See Meat)						
Lemons	2.25	.081	.049	.00135	.113	.112
Lemon juice	—	.060	—	—	.084	.059
Lentils	7.37	.031	.126	.00247	.043	.288
Lettuce	6.27	.224	.224	.00785	.314	.513
Linseed meal	—	—	—	—	—	—
Lupins	—	—	—	—	—	—
Macaroni	3.70	.006	.040	.00033	.008	.092
Mackerel (See Fish)						
Maple syrup	—	.037	(.003)	(.001)	.053	(.007)
Meat (See footnote on page 136)						
Milk, whole	4.75	.174	.134	.00035	.243	.308
skimmed	9.25	(.331)	.262	(.00068)	(.463)	(.600)
condensed, sweetened	2.70	(.096)	.072	(.0002)	(.135)	.165
condensed, unsweetened	5.75	.189	.146	(.0004)	(.264)	.335
Molasses	0.83	.074	.015	.00255	.102	.035
Muskmelon	1.51	.043	.038	.0008	.060	.088
Mutton (See Meat)						
Oatmeal	4.20	.017	.099	.00096	.024	.226
Olives	0.37	.041	.004	.00097	.057	.010
Onions	3.30	.069	.093	.0010	.097	.212
Oranges	1.55	.088	.040	.00039	.123	.091
Orange juice	1.44	.067	.037	.00046	.093	.082
Oysters	12.30	.106	.306	.00893	.149	.702
Parsnips	2.47	.091	.117	.0009	.128	.268
Peaches	1.70	.038	.057	.00073	.053	.130
Peanuts	4.70	.013	.073	.00036	.018	.166
Pears	0.95	.024	.041	.00047	.033	.093
Peas	6.92	.026	.120	.00165	.036	.274
Pecans	1.30	.012	.045	.00035	.017	.104
Pepper, green	4.59	.034	.145	.00222	.047	.333
Perch (See Fish)						
Persimmons	—	—	—	—	—	—
Pineapple, fresh	0.92	.041	.064	.00116	.058	.146

TABLE XXVII—*Continued.*

Food	Protein	Calcium (Ca)	Phosphorus (P)	Iron (Fe)	CaO	P_2O_5
	Grams	Grams	Grams	Grams	Grams	Grams
Plums	1.20	.024	.038	.00059	.033	.087
Pork (See Meat)						
Potatoes	2.65	.016	.069	.00156	.023	.158
sweet	1.45	.016	.037	.00041	.023	.084
Prunes	0.70	.018	.035	.00100	.025	.080
Pumpkin	3.90	.089	.229	(.00130)	.125	.525
Radishes	4.42	.073	.098	.00205	.102	.225
Raisins	0.75	.019	.038	.00139	.026	.088
Raspberries	2.57	.074	.078	.00091	.104	.178
Rhubarb	2.60	.189	.134	.00433	.264	.307
Rice, brown	2.52	(.003)	.060	.00058	(.004)	.138
white	2.27	.001+	.027	.00026	.003	.063
Rutabagas	3.15	.185	.140	—	.259	.322
Rye, entire	—	—	—	—	—	—
Salmon (See Fish)						
Shredded wheat	3.50	.011	.089	.00123	.016	.203
Spinach	8.79	.281	.285	.01506	.393	.653
Squash, summer	3.05	.039	.035	(.0013)	.054	.080
winter	3.10	.040	.061	(.0013)	.056	.139
Strawberries	2.56	.104	.072	.00205	.146	.164
Tapioca	0.11	.004	.025	.00045	.006	.058
Tomatoes	3.95	.050	.113	.00175	.070	.259
Turnips	3.30	.161	.117	.00127	.226	.269
Turnip tops	—	—	—	—	—	—
Veal (See Meat)						
Vinegar (cider)	—	.111	.090	.00213	.156	.206
Walnuts, California or English	2.60	.013	.015	.00030	.018	.116
Water cress	—	—	—	—	—	—
Watermelon	1.32	.038	.010	(.00099)	.053	.023
Wheat, entire	3.63?	.013	.118	.00140	.018	.270
Wheat germ	—	—	—	—	—	—
Wheat gluten	—	—	—	—	—	—
Whey	3.74	.165	.131	?	.231	.300
Whortleberries	—	—	—	—	—	—
Wine (average, 10 per cent alcohol)	—	.011	.021	.00167	.016	.047

APPENDIX.

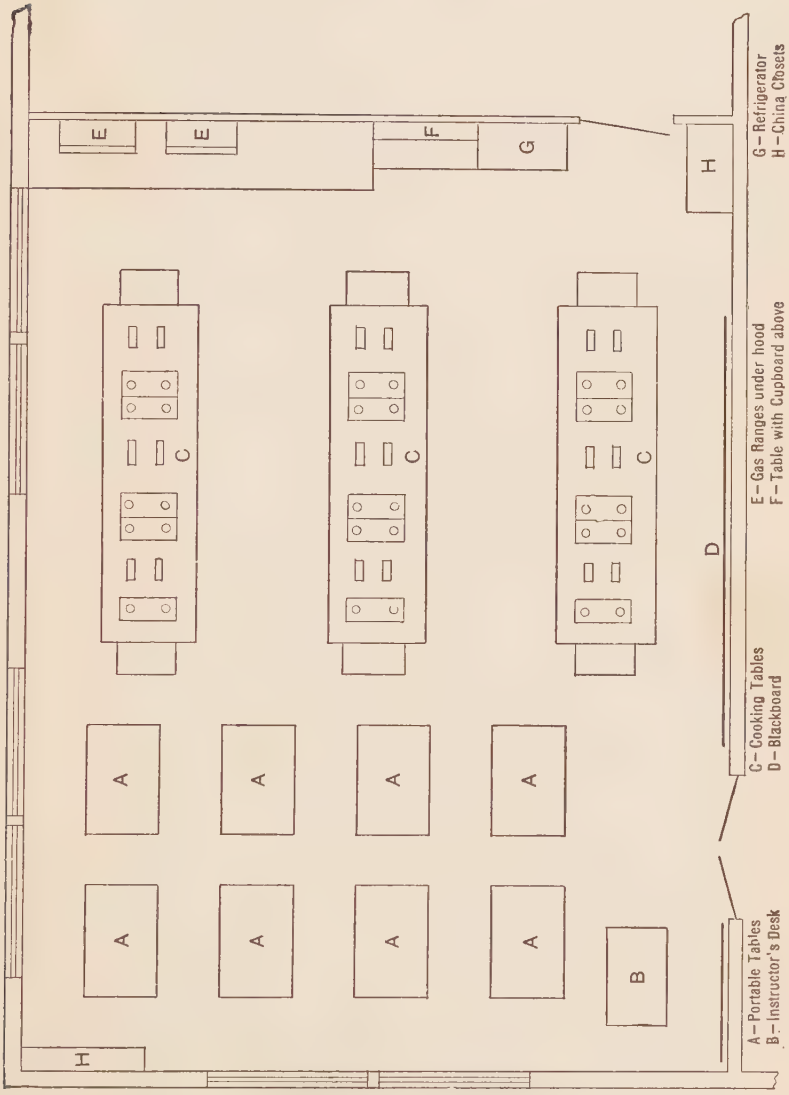
THE EQUIPMENT OF A DIETETICS LABORATORY.

It is essential that laboratory practice with actual food materials accompany instruction in the quantitative aspects of dietetics, and it is advantageous even in considering the qualitative side to present a dietary in concrete form. A place must therefore be provided where weighing and measuring of food materials and cooking and serving of days' rations for individuals and groups can be done by a whole class. The ordinary cooking laboratory can be made to answer the purpose by a few additions to its ordinary equipment, but a room definitely planned for the special problems involved is more satisfactory, and it is hoped that the following description of a laboratory which has been found to meet these needs will be suggestive to others.

The floor plan is shown in the accompanying drawing. The room is thirty-nine feet long and twenty-eight and one-half feet wide, and accommodates a class of thirty students.

One side of the room is occupied by three cooking tables with sinks at each end. These tables have on each side five drawers and five cupboards for utensils, and three deeper drawers for supplies such as flour and sugar. On each table are conveniently arranged five two-burner school stoves, and six Harvard trip scales with brass weights from one gram to five hundred grams. The usual individual arrangement of utensils in the desks has not been followed, owing to the fact that many problems in dietetics involve group work, but the three tables are equipped in identical fashion, so that three groups may prepare at once three family dietaries without students of one group having to go to another table for utensils, thus saving time and avoiding confusion. In each utensil drawer are placed knives, forks, spoons, holders and brushes, towels being provided from a common rack. In each cupboard is a single kind of utensil (or a group of small articles), the contents being plainly indicated on the door. This arrangement not only makes the different articles easy of access but also easy to replace.

The other side of the room is supplied with eight portable oak



Floor Plan of a Dietetics Laboratory—Rose.

tables three by four and one-half feet, with a single large drawer in each for storing paper, charts, cook books and other reference material. These tables serve a double purpose, being used for writing in the lecture hour, or for calculations, to which much time must be given in spite of all devices to eliminate mere clerical labor, and also affording space for the proper display of food materials, whether for the simple comparison of standard or 100-Calorie portions or for a critical study of days' rations for several families. The size of the tables makes the system very elastic. In setting out family dietaries one table will accommodate each meal for the group; by putting two together end to end, four individual days' dietaries can be set out parallel for comparison; two set side to side make a dining table of attractive shape for a meal to be eaten by a small group; or three side to side provide a large table of good proportions. For accommodating such a system doilies are more satisfactory than table cloths. Enough linen, silver, glass and china are provided that the whole class can be served in three groups to breakfast, luncheon and dinner at the same time, but no provision is made for elaborate service or fancy cookery.

A large amount of blackboard space is highly desirable for the purpose of recording the results of laboratory experiments or writing the menus and other details of dietaries which are being displayed. In this laboratory a single long board is provided (see drawing). Besides the blackboard a large cork bulletin board behind the instructor's desk affords a place to post charts, dietaries and other data.

The character of the equipment is shown in the following classified lists.

SILVER.

Forks	3½ dozen
Knives	2½ dozen
Teaspoons	7½ dozen*
Tablespoons	5 dozen†
Butter forks	¼ dozen
Sugar shells	¼ dozen

LINEN.

Napkins	1½ dozen‡
Doilies, round, 6 inches in diameter	5 dozen
Doilies, round, 10 inches in diameter	3 dozen
Doilies, round, 12 inches in diameter	½ dozen
Doilies, oval, 8 x 12 inches	½ dozen
Doilies, oval, 10 x 15 inches	½ dozen
Lunch cloths, 30 inches square	¾ dozen
Towels, hand	6 dozen
Towels, dish	6 dozen
Dishcloths	6 dozen

CHINA.

Bowls	¼ dozen
Butter dishes, individual	1½ dozen
Cups and saucers, after dinner coffee	1 dozen

* Including 5 dozen in drawers of cooking tables.

† Including 2½ dozen in drawers of cooking tables.

‡ Ordinarily paper napkins are used.

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